WAs Used

Contract No. 02-5SDP5014
ERP Contract No. 4460

THE STATE OF TEXAS §

COUNTY OF TRAVIS §

CONTRACT FOR ENGINEERING SERVICES
Cost Plus Fixed Fee,
Unit Cost, Lump Sum, or Specified Rate
Specific Deliverable with Work Authorizations

THIS CONTRACT FOR ENGINEERING SERVICES is made by and between the State of Texas acting by and through the Texas Department of Transportation, 125 E. 11th St., Austin, Texas 78701, hereinafter called "State," and Civil Associates, Inc., having its principal business address at 9330 LBJ Freeway, Suite 1150, Dallas, Texas 75243 hereinafter called "Engineer," for the purpose of contracting for engineering services.

WITNESSETH

WHEREAS, Government Code, Chapter 2254, Subchapter A, "Professional Services Procurement Act," provides for the procurement of engineering services; and

WHEREAS, 43 Texas Administrative Code §9.30 et seq. establishes the Texas Department of Transportation's policies and procedures for contracting for engineering services; and,

WHEREAS, the State desires to contract for engineering services generally described as to update and modify the previous schematic, Interstate Access Justification Report (IAJR), and the Environmental Assessment (EA) document in response to changes in the State procedures and new 2040 traffic data for the Interstate Highway (IH) 820 EA and IAJR for the limits of the project.; and,

WHEREAS, the State has selected the Engineer to provide the needed services and the Engineer has agreed to provide the services subject to the terms and conditions hereinafter set forth.

NOW, THEREFORE, the State and the Engineer, in consideration of the mutual covenants and agreements herein contained, do hereby mutually agree as follows.

AGREEMENT

ARTICLE 1. SCOPE OF SERVICES. The State and the Engineer will furnish items and perform those services for fulfillment of the contract as identified in Attachment B, Services to be Provided by the State and Attachment C, Services to be Provided by the Engineer. All services provided by the Engineer will conform to standard engineering practices and applicable rules and regulations of the Texas Engineering Practices Act and the rules of the Texas Board of Professional Engineers.

ARTICLE 2. CONTRACT PERIOD. This contract becomes effective when fully executed by all parties hereto and it shall terminate at the close of business on August 15, 2018 unless the contract period is: (1) modified by written supplemental agreement prior to the date of termination as set forth in Attachment A, General Provisions, Article 6, Supplemental Agreements; (2) extended due to a work suspension as provided for in Attachment A, Article 3, Paragraph C; or (3) otherwise terminated in accordance with Attachment A, General Provisions, Article 15, Termination. Any work performed or cost incurred before or after the contract period shall be ineligible for reimbursement.

ARTICLE 3. COMPENSATION.

A. Maximum Amount Payable. The maximum amount payable under this contract without modification is shown in Attachment E, Fee Schedule. Payment under this contract beyond the end of the current fiscal biennium is subject to availability of appropriated funds. If funds are not appropriated, this contract shall be terminated immediately with no liability to either party.

B. Basis of Payment. The basis of payment is identified in Attachment E, Fee Schedule. Reimbursement of costs incurred under a work authorization shall be in accordance with Attachment E, Fee Schedule.

C. Reimbursement of Eligible Costs. To be eligible for reimbursement, the Engineer's costs must (1) be incurred in accordance with the terms of a valid work authorization; (2) be in accordance with Attachment E, Fee Schedule; and (3) comply with cost principles set forth at 48 CFR Part 31, Federal Acquisition Regulation (FAR 31). Satisfactory progress of work shall be maintained as a condition of payment.

D. Engineer Payment of Subproviders. No later than ten (10) days after receiving payment from the State, the Engineer shall pay all subproviders for work performed under a subcontract authorized hereunder. The State may withhold all payments that have or may become due if the Engineer fails to comply with the ten-day payment requirement. The State may also suspend the work under this contract or any work authorization until subproviders are paid. This requirement also applies to all lower tier subproviders, and this provision must be incorporated into all subcontracts.

ARTICLE 4. PAYMENT REQUIREMENTS

A. Monthly Billing Statements. The Engineer shall request reimbursement of costs incurred by submitting the original and one copy of an itemized billing statement in a form acceptable to the State. The Engineer is authorized to submit requests for reimbursement no more frequently than monthly and no later than ninety (90) days after costs are incurred.

B. Billing Statement. The billing statement shall show the work authorization number for each work authorization included in the billing, the total amount earned to the date of submission, and the amount due and payable as of the date of the current billing statement for each work authorization. The billing statement shall indicate if the work has been completed or if the billing is for partial completion of the work. The fixed fee will be paid in proportion to the percentage of work completed per work authorization.

C. Overhead Rates. The Engineer shall use the provisional overhead rate indicated in Attachment E. If a periodic escalation of the provisional overhead rate is specified in Attachment E, the effective date of the revised provisional overhead rate must be included. For lump sum contracts, the overhead rate remains unchanged for the entire contract period.

D. Thirty Day Payments. Upon receipt of a billing statement that complies with all invoice requirements set forth in this Article, the State shall make a good faith effort to pay the amount which is due and payable within thirty (30) days.

E. Withholding Payments. The State reserves the right to withhold payment of the Engineer's billing statement in the event of any of the following: (1) If a dispute over the work or costs thereof is not resolved within a thirty day period; (2) pending verification of satisfactory work performed; (3) the Engineer becomes a delinquent obligor as set forth in Section 231.006 of the Family Code; (4) required reports are not received; or (5) the State Comptroller of Public Accounts will not issue a warrant to the Engineer. In the event that payment is withheld, the State shall notify the Engineer and give a remedy that would allow the State to release the payment.

F. Required Reports.

(1) As required in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Program Requirements, the Engineer shall submit Progress Assessment Reports to report actual payments made to Disadvantaged Business Enterprises or Historically Underutilized Businesses. One copy shall be submitted with each billing statement and one copy shall be submitted to the address included in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Program Requirements.

(2) Prior to contract closeout, the Engineer shall submit a Final Report (Exhibit H-4) to the address set forth in Attachment H.

(3) The Engineer shall submit a separate report with each billing statement showing the percent completion of the work accomplished during the billing period and the percent completion to date, and any additional written report requested by the State to document the progress of the work.

G. Subproviders and Suppliers List. Pursuant to requirements of 43 Texas Administrative Code §9.50 et seq., the Engineer must provide the State a list (Exhibit H-5/DBE or Exhibit H-6/HUB) of all Subproviders and suppliers that submitted quotes or proposals for subcontracts. This list shall include subproviders and suppliers names, addresses, telephone numbers, and type of work desired.

H. Debt to the State. If the State Comptroller of Public Accounts is prohibited from issuing a warrant or initiating an electronic funds transfer to the Engineer because of a debt owed to the State, the State shall apply all payment due the Engineer to the debt or delinquent tax until the debt or delinquent tax is paid in full.

I. Audit. The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the contract or indirectly through a subcontract under the contract. Acceptance of funds directly under the contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.

ARTICLE 5. WORK AUTHORIZATIONS. The State will issue work authorizations using the form included in Attachment D (Work Authorizations and Supplemental Work Authorizations) to authorize all work under this contract. The Engineer must sign and return a work authorization within seven (7) working days after receipt. Refusal to accept a work authorization may be grounds for termination of the contract. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to work not directly associated with or prior to the execution of a work authorization. Terms and conditions governing the use of work authorizations are set forth in Attachment A, General Provisions, Article 1.

ARTICLE 6. SIGNATORY WARRANTY. The undersigned signatory for the Engineer hereby represents and warrants that he or she is an officer of the organization for which he or she has executed this contract and that he or she has full and complete authority to enter into this contract on behalf of the firm. These representations and warranties are made for the purpose of inducing the State to enter into this contract.

ARTICLE 7. All notices to either party by the other required under this agreement shall be delivered personally or sent by certified or U.S. mail, postage prepaid, addressed to such party at the following addresses:

Engineer:	**State:**
Vice President Civil Associates, Inc. 9330 LBJ Freeway, Suite 1150 Dallas, Texas 75243	Director, Professional Engineering Procurement Services Texas Department of Transportation 125 E. 11th Street Austin, Texas 78701

All notices shall be deemed given on the date so delivered or so deposited in the mail, unless otherwise provided herein. Either party may change the above address by sending written notice of the change to the other party. Either party may request in writing that such notices shall be delivered personally or by certified U.S. mail and such request shall be honored and carried out by the other party.

ARTICLE 8. INCORPORATION OF PROVISIONS. Attachments A through H are attached hereto and incorporated into this contract as if fully set forth herein.

IN WITNESS WHEREOF, the **State** and the **Engineer** have executed this contract in duplicate.

THE ENGINEER

(Signature)
Naser Abusaad, P. E., AICP
(Printed Name)
Vice President
(Title)
8/19/2015
(Date)

THE STATE OF TEXAS

(Signature)
LtGen J.F. Weber USMC (Ret)
Executive Director
10/6
(Title)
10/6/15
(Date)

Attachments and Exhibits to Contract for Engineering Services Incorporated into the Contract by Reference

Attachments	Title
A	General Provisions
B	Services to Be Provided by the State
C	Services to Be Provided by the Engineer
D	Work Authorization and Supplemental Work Authorization
E	Fee Schedule
F	Work Schedule
G	Computer Graphics Files for Document and Information Exchange, if applicable
H-FG	Disadvantaged Business Enterprise (DBE) for Federal Funded Professional or Technical Services Contracts – See Attachment H Instructions **Not Applicable**
H – FN	Disadvantaged Business Enterprise (DBE) for Race-Neutral Professional or Technical Services Contracts – See Attachment H Instructions **Not Applicable**
H – SG	Historically Underutilized Business (HUB) Requirements for State Funded Professional or Technical Services Contracts – State of Texas HUB. Subcontracting plan required – See Attachment H Instructions
H – SN	Historically Underutilized Business (HUB) Requirements for State Funded Professional or Technical Services Contracts – No State of Texas HUB **Not Applicable**
Exhibits	**Title**
H – 1	Subprovider Monitoring System Commitment Worksheet
H – 2	Subprovider Monitoring System Commitment Agreement
H – 3	Monthly Progress Assessment Report – **Not Applicable**
H - 4	Subprovider Monitoring System Final Report
H - 5	Federal Subproviders and Supplier Information – **Not Applicable**
H - 6	HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report

ATTACHMENT A

GENERAL PROVISIONS

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ATTACHMENT A

GENERAL PROVISIONS

ARTICLE 1. WORK AUTHORIZATIONS

A. Use. The Engineer shall not begin any work until the State and the Engineer have signed a work authorization. Costs incurred by the Engineer before a work authorization is fully executed or after the completion date specified in the work authorization are not eligible for reimbursement. All work must be completed on or before the completion date specified in the work authorization, and no work authorization completion date shall extend beyond the contract period set forth in Article 2 of the contract (Contract Period).

B. Contents. Each work authorization will include: (1) types of services to be performed; (2) a period of performance with a beginning and ending date; (3) a full description of the work to be performed; (4) a work schedule with milestones; (5) a cost not to exceed amount, (6) the basis of payment whether cost plus fixed fee, unit cost, lump sum, or specified rate; and (7) a work authorization budget calculated using fees set forth in Attachment E, Fee Schedule. The Engineer is not to include additional contract terms and conditions in the work authorization. In the event of any conflicting terms and conditions between the work authorization and the contract, the terms and conditions of the contract shall prevail and govern the work and costs incurred.

C. Work Authorization Budget. A work authorization budget shall set forth in detail (1) the computation of the estimated cost of the work as described in the work authorization, (2) the estimated time (hours/days) required to complete the work at the hourly rates established in Attachment E, Fee Schedule; (3) a work plan that includes a list of the work to be performed, (4) a stated maximum number of calendar days to complete the work, and (5) a cost-not-to-exceed-amount or unit or lump sum cost and the total cost or price of the work authorization. The State will not pay items of cost that are not included in or rates that exceed those approved in Attachment E.

D. No Guaranteed Work. Work authorizations are issued at the discretion of the State. While it is the State's intent to issue work authorizations hereunder, the Engineer shall have no cause of action conditioned upon the lack or number of work authorizations issued.

E. Incorporation into Contract. Each work authorization shall be signed by both parties and become a part of the contract. No work authorization will waive the State's or the Engineer's responsibilities and obligations established in this contract. The Engineer shall promptly notify the State of any event that will affect completion of the work authorization.

F. Supplemental Work Authorizations. Before additional work may be performed or additional costs incurred, a change in a work authorization shall be enacted by a written supplemental work authorization in the form identified and attached hereto as Attachment D. Both parties must execute a supplemental work authorization within the period of performance specified in the work authorization. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to additional work not directly associated with the performance or prior to the execution of the work authorization. The Engineer shall allow adequate time for review and approval of the supplemental work authorization by the State prior to expiration of the work authorization. Any supplemental work authorization must be executed by both parties within the time period established in Article 2 of the contract, (Contract Period). Under no circumstances will a work authorization be allowed to extend beyond the contract's expiration date or will the total amount of funds exceed the maximum amount payable set forth in Article 3A of the contract (Compensation).

F-1. More Time Needed. If the Engineer determines or reasonably anticipates that the work authorized in a work authorization cannot be completed before the specified completion date, the Engineer shall promptly notify the State. The State may, at its sole discretion, extend the work authorization period by execution of supplemental authorization, using the form attached hereto as Attachment D.

F-2. Changes in Scope. Changes that would modify the scope of the work authorized in a work authorization must be enacted by a written supplemental work authorization. The Engineer must allow adequate time for the State to review and approve any request for a time extension prior to expiration of the work authorization. If the change in scope affects the amount payable under the work authorization, the Engineer shall prepare a revised work authorization budget for the State's approval.

G. New Work Authorization. If the Engineer does not complete the services authorized in a work authorization before the specified completion date and has not requested a supplemental work authorization, the work authorization shall terminate on the completion date. At the sole discretion of the State, it may issue a new work authorization to the Engineer for the incomplete work using the unexpended balance of the preceding work authorization for the project. If approved by the State, the Engineer may calculate any additional cost for the incomplete work using the rates set forth in the preceding work authorization and in accordance with Attachment E, Fee Schedule.

H. Emergency Work Authorizations. The State, at its sole discretion, may accept the Engineer's signature on a faxed copy of the work authorization as satisfying the requirements for executing the work authorization, provided that the signed original is received by the State within five business days from the date on the faxed copy.

I. Deliverables. Upon satisfactory completion of the work authorization, the Engineer shall submit the deliverables as specified in the executed work authorization to the State for review and acceptance.

ARTICLE 2. PROGRESS

A. Progress meetings. The Engineer shall from time to time during the progress of the work confer with the State. The Engineer shall prepare and present such information as may be pertinent and necessary or as may be requested by the State in order to evaluate features of the work.

B. Conferences. At the request of the State or the Engineer, conferences shall be provided at the Engineer's office, the office of the State, or at other locations designated by the State. These conferences shall also include evaluation of the Engineer's services and work when requested by the State.

C. Inspections. If federal funds are used to reimburse costs incurred under this contract, the work and all reimbursements will be subject to periodic review by the U. S. Department of Transportation.

D. Reports. The Engineer shall promptly advise the State in writing of events that have a significant impact upon the progress of a work authorization, including:

1. problems, delays, adverse conditions that will materially affect the ability to meet the time schedules and goals, or preclude the attainment of project work units by established time periods; this disclosure will be accompanied by statement of the action taken or contemplated, and any State or federal assistance needed to resolve the situation; and
2. favorable developments or events which enable meeting the work schedule goals sooner than anticipated.

E. Corrective Action. Should the State determine that the progress of work does not satisfy the milestone schedule set forth in a work authorization, the State shall review the work schedule with the Engineer to determine the nature of corrective action needed.

ARTICLE 3. SUSPENSION OF WORK AUTHORIZATION

A. Notice. Should the State desire to suspend a work authorization but not terminate the contract, the State may verbally notify the Engineer followed by written confirmation, giving (30) thirty days notice. Both parties may waive the thirty-day notice in writing.

B. Reinstatement. A work authorization may be reinstated and resumed in full force and effect within sixty (60) business days of receipt of written notice from the State to resume the work. Both parties may waive the sixty-day notice in writing.

C. Contract Period Not Affected. If the State suspends a work authorization, the contract period as determined in Article 2 of the contract (Contract Period) is not affected and the contract and the work authorization will terminate on the date specified unless the contract or work authorization is amended to authorize additional time.

D. Limitation of Liability. The State shall have no liability for work performed or costs incurred prior to the date authorized by the State to begin work, during periods when work is suspended, or after the completion date of the contract or work authorization.

ARTICLE 4. ADDITIONAL WORK

A. Notice. If the Engineer is of the opinion that any assigned work is beyond the scope of this contract and constitutes additional work, it shall promptly notify the State in writing, presenting the facts of the work authorization and showing how the work authorization constitutes additional work.

B. Supplemental Agreement. If the State finds that the work does constitute additional work, the State shall so advise the Engineer and a written supplemental agreement will be executed as provided in General Provisions, Article 6, Supplemental Agreements.

C. Limitation of Liability. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to additional work not directly associated with or prior to the execution of a supplemental agreement.

ARTICLE 5. CHANGES IN WORK

A. Work Previously Submitted as Satisfactory. If the Engineer has submitted work in accordance with the terms of this contract but the State requests changes to the completed work or parts thereof which involve changes to the original scope of services or character of work under the contract, the Engineer shall make such revisions as requested and as directed by the State. This will be considered as additional work and paid for as specified under Article 4, Additional Work.

B. Work Does Not Comply with Contract. If the Engineer submits work that does not comply with the terms of this contract, the State shall instruct the Engineer to make such revision as is necessary to bring the work into compliance with the contract. No additional compensation shall be paid for this work.

C. Errors/Omissions. The Engineer shall make revisions to the work authorized in this contract which are necessary to correct errors or omissions appearing therein, when required to do so by the State. No additional compensation shall be paid for this work.

ARTICLE 6. SUPPLEMENTAL AGREEMENTS

A. Need. The terms of this contract may be modified if the State determines that there has been a significant increase or decrease in the duration, scope, cost, complexity or character of the services to be performed. A supplemental agreement will be executed to authorize such significant increases or decreases. Significant is defined to mean a cost increase of any amount and a cost decrease of twenty percent (20%) or more of the original estimated project cost.

B. Compensation. Additional compensation, if appropriate, shall be calculated as set forth in Article 3 of the contract (Compensation). Significant changes affecting the cost or maximum amount payable shall be defined to include but not be limited to new work not previously authorized or previously authorized services that will not be performed. The parties may reevaluate and renegotiate costs at this time.

C. When to Execute. Both parties must execute a supplemental agreement within the contract period specified in Article 2 of the contract (Contract Period).

ARTICLE 7. OWNERSHIP OF DATA

A. Work for Hire. All services provided under this contract are considered work for hire and as such all data, basic sketches, charts, calculations, plans, specifications, and other documents created or collected under the terms of this contract are the property of the State.

B. Disposition of Documents. All documents prepared by the Engineer and all documents furnished to the Engineer by the State shall be delivered to the State upon request by the State. The Engineer, at its own expense, may retain copies of such documents or any other data which it has furnished the State under this contract, but further use of the data is subject to permission by the State.

C. Release of Design Plan. The Engineer (1) will not release any roadway design plan created or collected

under this contract except to its subproviders as necessary to complete the contract; (2) shall include a provision in all subcontracts which acknowledges the State's ownership of the design plan and prohibits its use for any use other than the project identified in this contract; and (3) is responsible for any improper use of the design plan by its employees, officers, or subproviders, including costs, damages, or other liability resulting from improper use. Neither the Engineer nor any subprovider may charge a fee for the portion of the design plan created by the State.

ARTICLE 8. PUBLIC INFORMATION AND CONFIDENTIALITY

A. Public Information. The State will comply with Government Code, Chapter 552, the Public Information Act, and 43 Texas Administrative Code §3.10 et seq. in the release of information produced under this contract.

B. Confidentiality. The Engineer shall not disclose information obtained from the State under this contract without the express written consent of the State.

C. Access to Information. The Engineer is required to make any information created or exchanged with the state pursuant to this contract, and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no additional charge to the state.

ARTICLE 9. PERSONNEL, EQUIPMENT AND MATERIAL

A. Engineer Resources. The Engineer shall furnish and maintain quarters for the performance of all services, in addition to providing adequate and sufficient personnel and equipment to perform the services required under the contract. The Engineer certifies that it presently has adequate qualified personnel in its employment for performance of the services required under this contract, or it will be able to obtain such personnel from sources other than the State.

B. Removal of Contractor Employee. All employees of the Engineer assigned to this contract shall have such knowledge and experience as will enable them to perform the duties assigned to them. The State may instruct the Engineer to remove any employee from association with work authorized in this contract if, in the sole opinion of the State, the work of that employee does not comply with the terms of this contract or if the conduct of that employee becomes detrimental to the work.

C. Replacement of Key Personnel. The Engineer must notify the State in writing as soon as possible, but no later than three business days after a project manager or other key personnel is removed from association with this contract, giving the reason for removal.

D. State Approval of Replacement Personnel. The Engineer may not replace the project manager or key personnel without prior consent of the State. The State must be satisfied that the new project manager or other key personnel is qualified to provide the authorized services. If the State determines that the new project manager or key personnel is not acceptable, the Engineer may not use that person in that capacity and shall replace him or her with one satisfactory to the State within forty-five (45) days.

E. Ownership of Acquired Property. Except to the extent that a specific provision of this contract states to the contrary, the State shall own all intellectual property acquired or developed under this contract and all equipment purchased by the Engineer or its subcontractors under this contract. All intellectual property and equipment owned by the State shall be delivered to the State when the contract terminates, or when it is no longer needed for work performed under this contract, whichever occurs first.

ARTICLE 10. LICENSE FOR TxDOT LOGO USE

A. Grant of License; Limitations. The Engineer is granted a limited revocable non-exclusive license to use the registered TxDOT trademark logo (TxDOT Flying "T") on any deliverables prepared under this contract that are the property of the State. The Engineer may not make any use of the registered TxDOT trademark logo on any other materials or documents unless it first submits that request in writing to the State and receives approval for the proposed use. The Engineer agrees that it shall not alter, modify, dilute, or otherwise misuse the registered TxDOT trademark logo or bring it into disrepute.

B. Notice of Registration Required: The Engineer's use of the Flying 'T' under this article shall be followed by the capital letter R enclosed within a circle (®) that gives notice that the Flying 'T' is registered in the United States Patent and Trademark Office (USPTO).

C. No Assignment or Sublicense. The Engineer may not assign or sublicense the rights granted by this article without the prior written consent of the State.

D. Term of License. The license granted to the Engineer by this article shall terminate at the end of the term specified in Article 2 of this contract.

ARTICLE 11. SUBCONTRACTING

A. Prior Approval. The Engineer shall not assign, subcontract or transfer any portion of professional services related to the work under this contract without prior written approval from the State.

B. DBE/HUB Compliance. The Engineer's subcontracting program shall comply with the requirements of Attachment H of the contract (DBE/HUB Requirements).

C. Required Provisions. All subcontracts for professional services shall include the provisions included in Attachment A, General Provisions, and any provisions required by law. The Engineer is authorized to pay subproviders in accordance with the terms of the subcontract, and the basis of payment may differ from the basis of payment by the State to the Engineer.

D. Prior Review. Subcontracts for professional services in excess of $25,000 may be reviewed by the State prior to performance of work thereunder.

E. Engineer Responsibilities. No subcontract relieves the Engineer of any responsibilities under this contract.

ARTICLE 12. INSPECTION OF WORK

A. Review Rights. The State and the U. S. Department of Transportation, when federal funds are involved, and any of their authorized representatives shall have the right at all reasonable times to review or otherwise evaluate the work performed hereunder and the premises in which it is being performed.

B. Reasonable Access. If any review or evaluation is made on the premises of the Engineer or a subprovider, the Engineer shall provide and require its subproviders to provide all reasonable facilities and assistance for the safety and convenience of the state or federal representatives in the performance of their duties.

ARTICLE 13. SUBMISSION OF REPORTS

All applicable study reports shall be submitted in preliminary form for approval by the State before a final report is issued. The State's comments on the Engineer's preliminary report must be addressed in the final report.

ARTICLE 14. VIOLATION OF CONTRACT TERMS

A. Increased Costs. Violation of contract terms, breach of contract, or default by the Engineer shall be grounds for termination of the contract, and any increased or additional cost incurred by the State arising from the Engineer's default, breach of contract or violation of contract terms shall be paid by the Engineer.

B. Remedies. This agreement shall not be considered as specifying the exclusive remedy for any default, but all remedies existing at law and in equity may be availed of by either party and shall be cumulative.

ARTICLE 15. TERMINATION

A. Causes. The contract may be terminated before the stated completion date by any of the following conditions.

1. By mutual agreement and consent, in writing from both parties.
2. By the State by notice in writing to the Engineer as a consequence of failure by the Engineer to perform the services set forth herein in a satisfactory manner.

3. By either party, upon the failure of the other party to fulfill its obligations as set forth herein.
4. By the State for reasons of its own, not subject to the mutual consent of the Engineer, by giving thirty business days notice of termination in writing to the Engineer.
5. By the State, if the Engineer violates the provisions of Attachment A, General Provisions Article 21, Gratuities, or Attachment H, Disadvantaged Business Enterprise/Historically Underutilized Business Requirements.
6. By satisfactory completion of all services and obligations described herein.

B. Measurement. Should the State terminate this contract as herein provided, no fees other than fees due and payable at the time of termination shall thereafter be paid to the Engineer. In determining the value of the work performed by the Engineer prior to termination, the State shall be the sole judge. Compensation for work at termination will be based on a percentage of the work completed at that time. Should the State terminate

this contract under paragraph (4) or (5) above, the Engineer shall not incur costs during the thirty-day notice period in excess of the amount incurred during the preceding thirty days.

C. Value of Completed Work. If the Engineer defaults in the performance of this contract or if the State terminates this contract for fault on the part of the Engineer, the State will give consideration to the following when calculating the value of the completed work: (1) the actual costs incurred (not to exceed the rates set forth in Attachment E, Fee Schedule) by the Engineer in performing the work to the date of default; (2) the amount of work required which was satisfactorily completed to date of default; (3) the value of the work which is usable to the State; (4) the cost to the State of employing another firm to complete the required work; (5) the time required to employ another firm to complete the work; and (6) other factors which affect the value to the State of the work performed.

D. Calculation of Payments. The State shall use the fee schedule set forth in Attachment E to the contract (Fee Schedule) in determining the value of the work performed up to the time of termination. In the case of partially completed engineering services, eligible costs will be calculated as set forth in Attachment E, Fee Schedule. The sum of the provisional overhead percentage rate for payroll additives and for general and administrative overhead costs during the years in which work was performed shall be used to calculate partial payments. Any portion of the fixed fee not previously paid in the partial payments shall not be included in the final payment.

E. Excusable Delays. Except with respect to defaults of subproviders, the Engineer shall not be in default by reason of any failure in performance of this contract in accordance with its terms (including any failure to progress in the performance of the work) if such failure arises out of causes beyond the control and without the default or negligence of the Engineer. Such causes may include, but are not restricted to, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.

F. Surviving Requirements. The termination of this contract and payment of an amount in settlement as prescribed above shall extinguish the rights, duties, and obligations of the State and the Engineer under this contract, except for those provisions that establish responsibilities that extend beyond the contract period.

G. Payment of Additional Costs. If termination of this contract is due to the failure of the Engineer to fulfill its contract obligations, the State may take over the project and prosecute the work to completion, and the Engineer shall be liable to the State for any additional cost to the State.

ARTICLE 16. COMPLIANCE WITH LAWS

The Engineer shall comply with all applicable federal, state and local laws, statutes, codes, ordinances, rules and regulations, and the orders and decrees of any court, or administrative bodies or tribunals in any manner affecting the performance of this contract, including, without limitation, worker's compensation laws, minimum and maximum salary and wage statutes and regulations, nondiscrimination, and licensing laws and regulations. When required, the Engineer shall furnish the State with satisfactory proof of its compliance therewith.

ARTICLE 17. INDEMNIFICATION

A. Errors, Omissions, Negligent Acts. The Engineer shall save harmless the State and its officers and

employees from all claims and liability due to activities of itself, its agents, or employees, performed under this contract and which are caused by or result from error, omission, or negligent act of the Engineer or of any person employed by the Engineer.

B. Attorney Fees. The Engineer shall also save harmless the State from any and all expense, including, but not limited to, attorney fees which may be incurred by the State in litigation or otherwise resisting said claim or liabilities which may be imposed on the State as a result of such activities by the Engineer, its agents, or employees.

ARTICLE 18. ENGINEER'S RESPONSIBILITY

A. Accuracy. The Engineer shall be responsible for the accuracy of work and shall promptly make necessary revisions or corrections resulting from its errors, omissions, or negligent acts without compensation.

B. Errors and Omissions. The Engineer's Responsibility for all questions arising from design errors or omissions will be determined by the State. All decisions shall be in accordance with the State's "Consultant Errors & Omissions Correction and Collection Procedures" and Texas Government Code §2252.905. The Engineer will not be relieved of the responsibility for subsequent correction of any such errors or omissions or for clarification of any ambiguities until after the construction phase of the project has been completed.

C. Seal. The responsible Engineer shall sign, seal and date all appropriate engineering submissions to the State in accordance with the Texas Engineering Practice Act and the rules of the Texas Board of Professional Engineers.

D. Resealing of Documents. Once the work has been sealed and accepted by the State, the State, as the owner, will notify the party to this contract, in writing, of the possibility that a State engineer, as a second engineer, may find it necessary to alter, complete, correct, revise or add to the work. If necessary, the second engineer will affix his seal to any work altered, completed, corrected, revised or added. The second engineer will then become responsible for any alterations, additions or deletions to the original design including any effect or impacts of those changes on the original engineer's design.

ARTICLE 19. NONCOLLUSION

A. Warranty. The Engineer warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Engineer, to solicit or secure this contract and that it has not paid or agreed to pay any company or engineer any fee, commission, percentage, brokerage fee, gifts, or any other consideration, contingent upon or resulting from the award or making of this contract.

B. Liability. For breach or violation of this warranty, the State shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or compensation, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

ARTICLE 20. INSURANCE

The Engineer certifies that it has insurance on file with Contract Services of the Texas Department of Transportation in the amount specified on Form 1560-CS, Certificate of Insurance, as required by the State. No other proof of insurance is acceptable to the State. The Engineer certifies that it will keep current insurance on file with that office for the duration of the contract period. If insurance lapses during the contract period, the Engineer must stop work until a new certificate of insurance is provided.

ARTICLE 21. GRATUITIES

A. Employees Not to Benefit. Texas Transportation Commission policy mandates that employees of the Texas Department of Transportation shall not accept any benefit, gift or favor from any person doing business with or who reasonably speaking may do business with the State under this contract. The only exceptions allowed are ordinary business lunches and items that have received the advance written approval of the Executive Director of the Texas Department of Transportation.

B. Liability. Any person doing business with or who reasonably speaking may do business with the State under this contract may not make any offer of benefits, gifts or favors to department employees, except as

mentioned above. Failure on the part of the Engineer to adhere to this policy may result in the termination of this contract.

ARTICLE 22. DISADVANTAGED BUSINESS ENTERPRISE OR HISTORICALLY UNDERUTILIZED BUSINESS REQUIREMENTS

The Engineer agrees to comply with the requirements set forth in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Subcontracting Plan Requirements with an assigned goal or a zero goal, as determined by the State.

ARTICLE 23. MAINTENANCE, RETENTION AND AUDIT OF RECORDS

A. Retention Period. The Engineer shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred and services provided (hereinafter called the Records). The Engineer shall make the records available at its office during the contract period and for four years from the date of final payment under this contract, until completion of all audits, or until pending litigation has been completely and fully resolved, whichever occurs last.

B. Availability. The State or any of its duly authorized representatives, the Federal Highway Administration, the United States Department of Transportation, Office of Inspector General, and the Comptroller General shall have access to the Engineer's Records which are directly pertinent to this contract for the purpose of making audits, examinations, excerpts and transcriptions.

ARTICLE 24. NEPOTISM DISCLOSURE

A. In this section the term "relative" means:

(1) a person's great grandparent, grandparent, parent, aunt or uncle, sibling, niece or nephew, spouse, child, grandchild, or great grandchild, or

(2) the grandparent, parent, sibling, child, or grandchild of the person's spouse.

B. A notification required by this section shall be submitted in writing to the person designated to receive official notices under this contract and by first-class mail addressed to Contract Services Office, Texas Department of Transportation, 125 East 11th Street, Austin Texas 78701. The notice shall specify the Engineer's firm name, the name of the person who submitted the notification, the contract number, the district, division, or office of TxDOT that is principally responsible for the contract, the name of the relevant Engineer employee, the expected role of the Engineer employee on the project, the name of the TxDOT employee who is a relative of the Engineer employee, the title of the TxDOT employee, the work location of the TxDOT employee, and the nature of the relationship.

C. By executing this contract, the Engineer is certifying that the Engineer does not have any knowledge that any of its employees or of any employees of a subcontractor who are expected to work under this contract have a relative that is employed by TxDOT unless the Engineer has notified TxDOT of each instance as required by subsection (b).

D. If the Engineer learns at any time that any of its employees or that any of the employees of a subcontractor who are performing work under this contract have a relative who is employed by TxDOT, the Engineer shall notify TxDOT under subsection (b) of each instance within thirty days of obtaining that knowledge.

E. If the Engineer violates this section, TxDOT may terminate the contract immediately for cause, may impose any sanction permitted by law, and may pursue any other remedy permitted by law.

ARTICLE 25. CIVIL RIGHTS COMPLIANCE

(1) Compliance with Regulations: The Engineer shall comply with the regulations of the Department of Transportation, Title 49, Code of Federal Regulations, Parts 21, 25, 27 and 28 as they relate to nondiscrimination; also Executive Order 11246 titled Equal Employment Opportunity as amended by Executive Order 11375.

(2) Nondiscrimination: The Engineer, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

(3) Solicitations for Subcontracts, Including Procurement of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the Engineer for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Engineer of the Engineer's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, sex, or national origin.

(4) Information and Reports: The Engineer shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and facilities as may be determined by the Texas Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of the Engineer is in the exclusive possession of another who fails or refuses to furnish this information, the Engineer shall so certify to the Texas Department of Transportation or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the Engineer's noncompliance with the nondiscrimination provisions of this contract, the Texas Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

(a) withholding of payments to the Engineer under the contract until the Engineer complies and/or
(b) cancellation, termination, or suspension of the contract, in whole or in part.

(6) Incorporation of Provisions: The Engineer shall include the provisions of paragraphs (1) through (5) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Engineer shall take such action with respect to any subcontract or procurement as the Texas Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance provided, however, that in the event an Engineer becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Engineer may request the Texas Department of Transportation to enter into such litigation to protect the interests of the State; and, in addition, the Engineer may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE 26. PATENT RIGHTS
The State and the U. S. Department of Transportation shall have the royalty free, nonexclusive and irrevocable right to use and to authorize others to use any patents developed by the Engineer under this contract.

ARTICLE 27. COMPUTER GRAPHICS FILES
The Engineer agrees to comply with Attachment G, Computer Graphics Files for Document and Information Exchange, if determined by the State to be applicable to this contract.

ARTICLE 28. CHILD SUPPORT CERTIFICATION
Under Section 231.006, Texas Family Code, the Engineer certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate. If the above certification is shown to be false, the Engineer is liable to the state for attorney's fees, the cost necessary to complete the contract, including the cost of advertising and awarding a second contract, and any other damages provided by law or the contract. A child support obligor or business entity ineligible to receive payments because of a payment delinquency of more than thirty (30) days remains ineligible until: all arrearages have been paid; the obligor is in compliance with a written repayment agreement or court order as to any existing delinquency; or the court of continuing jurisdiction over the child support order has granted the obligor an exemption from Subsection (a) of Section 231.006, Texas Family Code, as part of a court-supervised effort to improve earnings and child support payments.

ARTICLE 29. DISPUTES
A. Disputes Not Related to Contract Services. The Engineer shall be responsible for the settlement of all

contractual and administrative issues arising out of any procurement made by the Engineer in support of the services authorized herein.

B. Disputes Concerning Work or Cost. Any dispute concerning the work hereunder or additional costs, or any non-procurement issues shall be settled in accordance with 43 Texas Administrative Code §9.2.

ARTICLE 30. SUCCESSORS AND ASSIGNS
The Engineer and the State do each hereby bind themselves, their successors, executors, administrators and assigns to each other party of this agreement and to the successors, executors, administrators and assigns of such other party in respect to all covenants of this contract. The Engineer shall not assign, subcontract or transfer its interest in this contract without the prior written consent of the State.

ARTICLE 31. SEVERABILITY
In the event any one or more of the provisions contained in this contract shall for any reason, be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and this contract shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

ARTICLE 32. PRIOR CONTRACTS SUPERSEDED
This contract constitutes the sole agreement of the parties hereto for the services authorized herein and supersedes any prior understandings or written or oral contracts between the parties respecting the subject matter defined herein.

ARTICLE 33. CONFLICT OF INTEREST
A. Representation by Engineer. The undersigned represents that its firm has no conflict of interest that would in any way interfere with its or its employees' performance of services for the department or which in any way conflicts with the interests of the department. The firm shall exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict with the department's interests.

B. Certification Status. The Engineer certifies that it is not:
1. a person required to register as a lobbyist under Chapter 305, Government Code;
2. a public relations firm; or
3. a government consultant.

C. Environmental Disclosure. If the Engineer will prepare an environmental impact statement or an environmental assessment under this contract, the Engineer certifies by executing this contract that it has no financial or other interest in the outcome of the project on which the environmental impact statement or environmental assessment is prepared.

D. Restrictions on Testing. If the Engineer will perform commercial laboratory testing under this contract, on any project the Engineer may not perform more than one of the following types of testing:
1. verification testing;
2. quality control testing; or
3. independent assurance testing.

ARTICLE 34. OFFICE OF MANAGEMENT AND BUDGET (OMB) AUDIT REQUIREMENTS
The parties shall comply with the requirements of the Single Audit Act of 1984, P.L. 98-502, ensuring that the single audit report includes the coverage stipulated in 2 CFR 200.

ARTICLE 35. DEBARMENT CERTIFICATIONS
The parties are prohibited from making any award at any tier to any party that is debarred or suspended or otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549, "Debarment and Suspension." By executing this agreement, the Engineer certifies that it is not currently debarred, suspended, or otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549. The parties to this contract shall require any party to a subcontract or purchase order awarded under this contract to certify its eligibility to receive Federal funds and, when requested by the State, to furnish a copy of the certification.

ARTICLE 36. E-VERIFY CERTIFICATION

Pursuant to Executive Order RP-80, Engineer certifies and ensures that for all contracts for services, Engineer shall, to the extent permitted by law, utilize the United States Department of Homeland Security's E-Verify system during the term of this agreement to determine the eligibility of:

1. All persons employed by Engineer during the term of this agreement to perform duties within the State of Texas; and
2. All persons, including subcontractors, assigned by Engineer to perform work pursuant to this agreement.

Violation of this provision constitutes a material breach of this agreement.

ATTACHMENT B

SERVICES TO BE PROVIDED BY THE STATE

For each negotiated Work Authorization the State will designate a Project Manager to represent the State and will provide the following information or services as listed below by Function Code (FC).

FC 110 - Route and Design Studies

- Provide all data that TxDOT has on file concerning the project.
- Provide As-built Plans.
- Provide Preliminary Cost Estimate, Project Information and other Documentation.
- Provide Topographic (Planimetric) Base File and Aerial Photography.
- Provide latest approved traffic data.
- Provide DCIS project information.
- Provide previously prepared Value Engineering Report, if available and applicable.
- Provide previously prepared Interstate Access Justification Report (IAJR).
- Provide Crash Data
- Provide Pavement Design

FC 120 - Social, Economic and Environmental Studies and Public Involvement

- Provide available Environmental Assessment.
- Provide available project development documents, environmental assessments or impacts, schematics, typical sections, public involvement records, etc.
- Advertise, and conduct each required public meeting and hearing.
- Provide designated State representatives for each public meeting and hearing.
- Review the information and material developed by the Engineer to be presented at each public meeting or public hearing so it can be viewed by the public five weeks before any such event.
- Furnish an electronic copy of the format (Microsoft Excel) for the mailing list for public meetings and hearing

FC 130 - Right-of-Way Data

- Provide available existing right of way plans for the proposed project location.
- Conduct all right-of-way appraisals and acquisitions, if applicable.

FC 150 - Field Surveying and Photogrammetry

- Provide survey control points such as horizontal control points, benchmark elevations and descriptions for vertical control, and listing of horizontal alignment coordinates for baseline control only.

- Provide aerial photographs (contact prints) of the proposed project area.
- Furnish a Digital Terrain Model (DTM) file to generate Cross Sections and contours.

FC 161 – Drainage

- Provide existing hydraulic and hydrologic studies associated with the project and project area.
- Provide format for drainage report

FC 145/164 - Project Management and Administration

- Prompt Review of Deliverables.
- Provide copies of preferred District Standards to be used.

Additional Responsibilities

- Interface with local, regional, State and Federal agencies or other entities on behalf of Engineer.
- Coordinate and notify in writing with Emergency Medical Services (EMS), school system, United State (U.S.) Mail, etc. for any detour routes and roadway closures. Upon request by the State, the Engineer shall prepare the necessary exhibits.
- Provide the Engineer with timely reviews in accordance with Exhibit C, "Work Schedule" of the Work Authorization and decisions to enable the Engineer to maintain the project schedule as approved by the State.
- Secure all required permits and access agreements.
- Review of Exhibit "A" Layouts

ATTACHMENT C
SERVICES TO BE PROVIDED BY THE ENGINEER

PRELIMINARY ENGINEERING FOR INTERSTATE HIGHWAY (IH) 820 FROM IH 20 TO MEADOWBROOK DRIVE, AND IH 20 FROM FOREST HILL DRIVE TO EAST OF KELLY ELLIOTT ROAD, AND UNITED STATES HIGHWAY (US) 287 FROM BISHOP STREET TO SUBLETT ROAD IN TARRANT COUNTY

CSJ: 0008-13-125, etc.

The scope of engineering services to be provided by the Engineer include: updating and modifying the previous schematic, Interstate Access Justification Report (IAJR), and the Environmental Assessment (EA) document in response to changes in the State procedures and new 2040 traffic data for the Interstate Highway IH 820 EA and IAJR for the limits of the project. A phasing program will be developed in order to determine what improvements can be designed and constructed based on the availability of funds. This would include early breakout projects within the project limits.

Transportation Equity Act for the 21st Century (TEA-21) replaced the stand-alone Major Investment Study (MIS) requirement of Federal Highway Administration/Federal Transit Administration (FHWA/FTA) joint planning regulations with a directive that, for federally funded highway and transit projects, analyses under the planning provisions of the act and National Environmental Policy Act (NEPA) be integrated. This essentially eliminated the MIS as a separate requirement as set forth in the planning regulations and calls for an integration of the requirements into the planning and NEPA analyses. As such, an update to the EA, incorporating elements of the MIS, will be conducted to comply with the directive.

The study corridor includes IH 820 from IH 20 to Meadowbrook Drive, IH 20 from Forest Hill Drive to East of Kelly Elliott Road, and US 287 from South of Bishop Street to Sublett Road. The study will include an evaluation of an extension of IH 820 from Meadowbrook Drive to IH 30. The interchanges, ramp terminals and intersections of the frontage roads at other major arterials are also included in the study area. The project length is approximately 15.0 miles (IH 820, IH 20 and US 287).

The environmental services to be performed by the Engineer shall consist of the preparation of an EA, two Public Meetings, and one Public Hearing. The project shall be incorporated into the future Metropolitan Transportation Plan (MTP) updates so environmental clearance can be secured.

The Engineer shall prepare the schematic for proposed improvements to a level of detail including: typical sections, horizontal and vertical alignments and geometric data, Right Of Way (ROW) (existing and proposed), approved hydraulic analysis, preliminary bridges layouts, preliminary noise and retaining walls (plan), signalization, signing, pavement markings, details, and miscellaneous items. Interim transitions shall be constructed on each end to tie to the proposed improvements to the existing highway.

Separately, the Engineer shall provide preliminary layouts, maps, special details, aesthetic guidelines, cross sections, quantities, various reports, and other documents as necessary to develop the schematic. Quantities for project estimate are to include: grading, paving, drainage, removals, structures, traffic control and construction sequencing, signalization, storm water pollution prevention plans, guide signing, pavement markings, and miscellaneous items.

The Engineer shall review and utilize previous IH 820 schematic design, environmental work and data to the maximum extent as long as the information still meets current design criteria and regulation.
The Engineer shall provide the following services in accordance with the general requirements:

FC 110 – Route and Design Studies

The Engineer shall revise/update an alignment and proposed roadway schematic layout to include projected traffic volumes, existing and proposed typical sections. The Engineer shall furnish Microsoft Office and MicroStation V8 Select Series 3 or V8i Select Series 3 Geopak computer generated media containing the roadway schematic layout to the State. All supporting attachments and exhibits shall accompany the schematic layout. All Microsoft Office and MicroStation V8 or V8i-Geopak computer generated files containing the roadway schematic layout shall be compatible with the software used by the State.

The Engineer shall obtain, review, and evaluate existing and twenty-year projected traffic data for the No-Build and Preferred Alternatives for use in the preparation of the IAJR and schematic design layout. The data and analyses for the IAJR shall include this upstream and downstream interchanges from each project limits; it shall be utilized in accordance with the requirements for schematic development and consistent with the policies of the State.

The Engineer shall prepare preliminary drawings to identify any potential adverse impacts within the project corridor. Identification of all existing and proposed utilities (public and private), structures, burial grounds, neighborhood communities, historical landmarks, and undeveloped areas is required. Any potential utility conflicts and structural impediments must be identified as such. The Engineer shall propose alternative alignments which would avoid or minimize displacements and damages, and prepare any additional attachments or exhibits required illustrating a preferred alternative alignment. The Engineer shall render assistance to the State for agency meetings during the development of the schematic design requested by the State. The Engineer shall also render assistance to the State for public meetings and a public hearing.

An itemization of the schematic design and engineering work activity to be performed under this contract is detailed below. All designs shall be prepared in accordance with the latest version of: State Roadway Design Manual revised October 2014, State Project Development Process Manual, American Association Of State Highway And Transportation Officials (AASHTO) Load And Resistance Factor Design (LRFD), AASHTO A Policy on Geometric Design of Highways and Streets, State Standard Specifications for Construction of Highways, Streets, and Bridges, State Traffic Operations Manual on Highway Operations, Highway Capacity Manual - Transportation Research Board, and the State's Environmental Compliance Toolkits and Handbooks.

The schematic layouts shall adhere to a design scale of 1 in. = 200 ft. The schematic layout, exhibits, and attachments shall be developed in English units and will have a maximum size of three feet in height and ten feet in length. All Microsoft Office and MicroStation V8 or V8i - Geopak computer graphic files furnished to the State must be submitted in electronic format by means of a Compact Disk (CD) media that shall be compatible to the State. Schematics shall follow the State and Federal Highway Administration (FHWA) standards, the schematic shall also follow the Computer Aided Design And Drafting (CADD) standards used by the State and shall be submitted as an original document, accompanied with an original MicroStation V8 or V8i formatted graphics file. Final copies of the schematic design shall be signed by a professional engineer licensed in the State of Texas.

110.1 Schematic Design – General Tasks

110.1.1 Data Collection and Field Reconnaissance. The Engineer shall collect, review and evaluate data described below. The Engineer shall notify the State in writing whenever the Engineer finds disagreement with the following information or documents listed below:

110.1.1.1 Record plans, existing schematics, ROW maps, and previous corridor studies, reports, and plans conducted by other agencies and groups, environmental documents, existing channel and drainage easement data, existing traffic counts, accident data, Bridge Inventory, Inspection, and Appraisal Program (BRINSAP) records.

110.1.1.2 Utility plans and documents from appropriate municipalities and utility companies;

subsurface utility engineering mapping from adjacent project(s), and as added from the State utility permitting processes.

110.1.1.3 Readily available flood plain information and studies from the Federal Emergency Management Agency (FEMA), the United States Army Corps of Engineers (USACE), local municipalities, and other governmental agencies.

110.1.1.4 Obtain graphic files, plans, documents, and other data for existing and proposed improvements along the corridor, review and organize information into design files.

110.1.1.5 Obtain from the State existing photogrammetric data, including coordinate-corrected digital aerial imagery (which is ready to be referenced into the MicroStation design files without further coordinate adjustment) and digital terrain model (DTM) files. The Engineer shall utilize this information as the base (topographic) mapping for the design.

110.1.1.6 Conduct field reconnaissance and collect data including a photographic record of notable existing features, including drainage structures, bridges, bridge class culverts, and surface utilities.

110.1.1.7 Provide staff members to visit the project area as needed.

110.1.1.8 Obtain North Central Texas Council of Governments (NCTCOG) Mobility 2040 Update and Mobility 2040 databases (eg. demographics, major employers, network configuration, Traffic Analysis Zone (TAZ) structure, etc.)

110.1.2 Preliminary Design Summary Report and Criteria

The Engineer shall prepare a Design Summary Report (DSR) and the design criteria for the project and shall submit any required modifications to the State for approval. The Engineer shall use the design criteria to identify the maximum and minimum values for the design elements and shall identify the project preferred values. The Engineer shall make up to three submittals of the DSR/Design Criteria. In accordance with the State's Project Development Manual, the Engineer, in cooperation with the State, shall plan, attend and document a Design Concept Conference (DCC) to be held prior to 30 percent milestone submittal.

110.1.3 Utility Base Map

The Engineer shall review and incorporate Quality Level C, D, and some A (up to 10 spot locations) existing utility data collected under Function Code 130 into schematic design files. The Engineer shall obtain information on existing utilities from utility owners and shall identify and evaluate all known existing and proposed public and private utilities The Engineer shall identify potential conflicts and attempt to minimize the potential adverse utility impacts in the preparation of the revised schematic design.

110.1.4 Typical Sections

The Engineer shall update existing and revise proposed typical sections that depict the number and type of lanes, shoulders, median width, curb offsets, cross slope, border width, clear zone widths, retaining and noise walls (if applicable), and Right-Of-Way (ROW) limits.

110.1.5 Environmental Constraints

The Engineer shall update impacts to environmentally sensitive sites during the schematic revision process. The environmental sensitive sites may include historic structures, cemeteries, residential areas, historical landmarks, public parks, hazardous material sites, streams/waterbodies, floodplains,and farmland.

110.1.6 Drainage

The Engineer shall use data from as-built plans and FEMA maps to locate drainage outfall(s) and to determine proposed culvert sizes, design flows, and water surface elevations for use in the design of roadway geometry. The Engineer shall conduct a Preliminary Drainage Study to determine and evaluate the adequacy of the ROW needed to accommodate the ditch profile and side slopes. The study will identify the water surface elevations for the 2, 5, 10, 25, 50, and 100 year storm events, identify and locate outfalls, provide overall drainage area map, sub-drainage area map, and provide a drainage study identifying the results of the study. Incorporate into the schematic design the preliminary proposed cross road drainage structures.

110.1.7 ROW Requirements

The Engineer shall update survey data provided by the State to determine the revised ROW and drainage easement requirements based on the revised proposed alignment, typical sections, access control, terrain, construction requirements, drainage, clear zone, maintenance, Intelligent Transportation System (ITS) and environmental mitigation requirements. Develop Travel Forecast and Modal Splits.

110.1.8 Develop Travel Forecast and Modal Splits

The Engineer shall develop design-year and opening year travel forecasts for No-Build and Build Conditions including all upstream/downstream interchanges from the project limits, mode splits, and related traffic analysis from a corridor modeling perspective in coordination with Transportation Planning & Programming (TPP) and NCTCOG and shall utilize the model results in the analysis of alternatives and in the development of traffic projections for environmental analysis. The Engineer shall prepare traffic line diagrams and coordinate with TPP and NCTCOG as needed to develop traffic analysis for freeway, transit, tolling and managed lanes for the entire corridor, as well as particular intersections and interchange operations for no-build and up to five build alternatives. The Engineer shall review the model structure and recommend any zone and network changes necessary to support the corridor analysis. It is anticipated that the model runs shall be performed by NCTCOG as well as any metrics required by Moving Ahead for Progress in the 21st Century Act (MAP-21).

110.1.9 Traffic Projections Methodology Memo and Average Daily Corridor Traffic Projections

The Engineer shall prepare traffic volumes for the No-Build alternative. Prepare a Traffic Projections Methodology memo, based on the information provided in the TPP traffic analysis package and the travel demand model runs provided by NCTCOG. The Engineer shall prepare average daily corridor traffic projections for 2020, Design Year (2040) and Pavement Design Year (2050). These projections shall include graphic representations of the anticipated daily turning movements along the corridor (suitable for inclusion in the preliminary design schematic) and the Traffic Analysis for Highway Design table. The traffic memo and projections shall be submitted to TPP for approval. The Engineer shall make up to four submittals of the traffic memo/projections

110.1.10 Traffic Analyses

The Engineer shall perform a detailed Level-of-Service (LOS) analysis for the entire Project including upstream/downstream interchanges, for the No-Build and Preferred Alternative using the Project's approved forecasted design-year traffic volumes supplied by the Engineer and approved by the State, and utilizing Highway Capacity Software (HCS) 2010 software and VISSIM. The approved traffic volumes shall be supplied by the Engineer and shall be based upon NCTCOG travel forecast modeling and the State's prescribed procedures for determining future traffic projections. Based upon design adequacy as directly related to the Traffic Analysis, The Engineer shall continue to refine, finalize the Design Schematic. This LOS shall be completed such that it receives FHWA approval as part of the IAJR.

110.1.10.1 Develop base and design year traffic (2020 and 2040) LOS for No-Build (existing) and the Preferred Alternative micro-simulation models in VISSIM to validate and supplement the HCS LOS results. The micro- simulation model shall provide system level analysis that incorporates the interaction between design features that cannot be analyzed with HCS. The micro-simulation model shall utilize the design-year traffic volumes for the AM & PM peak hours. This model shall not include the application of the dynamic traffic assignment module. The model shall use general driver behavior parameters. The micro-simulation models shall consider all freeway links as free general purpose lanes. All the developed simulation models shall include a 30-minute pre- and post- load periods. The volumes in the pre- and post-load periods shall be calculated based on existing and forecasted traffic data to represent the waxing and waning of traffic surrounding the peak hour for a total of two simulated hours. The middle hour shall be utilized for all data analysis.

110.1.10.2 SYNCHRO Intersection analysis shall be performed for all signalized intersections for base and design year traffic (2020 and 2040) LOS for No-Build (existing) and the Preferred Alternative to supplement the operational analysis.

110.1.11 Bicycle and Pedestrian Accommodations

The Engineer shall comply with the federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by United States Department of Transportation (USDOT). This policy encourages the incorporation of safe and convenient walking and bicycling facilities into transportation projects. Public input, as well as local city and metropolitan planning organization for bicycle and pedestrian plans shall be considered. For the development of the conceptual and geometric schematic designs, sidewalks shall generally be proposed along the frontage road and along the cross streets to provide for contiguous pedestrian access and safety where feasible. In addition, shared use lanes shall be provided along the outside frontage road lane and cross street lane to provide for bicycle access and safety where feasible.

110.1.12 High Occupancy Vehicle and High Occupancy Lanes

The Engineer shall address High Occupancy Vehicle lane, Managed Lanes and other special use lanes or public transportation elements shall be addressed and considered within the context of the mainlane and interchange design.

110.2 Conceptual Design Schematics Alternatives

Based on initial review of the study corridor, the State has identified the following alternatives for

further analysis as part of this project:

Alternative 1 – No-Build Conditions;

Alternative 2 – Reversible Managed Lanes;

Alternative 3 – Bi-directional Express Lanes – Free;

Alternative 4 – Bi-directional Managed Lanes – Toll;

Alternative 5 – Extending Managed Lanes to IH 30.

Alternative 6 – Reconfigure existing interchanges to eliminate left hand entrance/exits with additional capacity as general purpose lanes – No managed lanes.

Conceptual layouts at 1"=500' will be developed to show each alternative. Profile work will be done only to the extent necessary to lay out the proper horizontal geometry. For the Alternatives 2 through 4 the tie-in location for the entrance and exit ramps for the managed and express lanes will be developed along with an order of magnitude cost estimate for each, operational analysis for each conceptual layout and a level of services analysis only for the respective ramps schemes that changed from the approved schematic.

The schematic design for the three corridors in the Project will be revised which include the three corridors of IH 820 from IH 20 interchange northward to IH 30 interchange southern entrance/exit ramps; IH 20 from the interchange East of Kelly Elliott westward to Forest Hill Drive: and US 287 from South of Bishop Street, southward to Sublett Road. These corridors overlay each other in specific areas.

The State has requested evaluation of the preferred alternative of reversible managed lanes included in the schematic approved to proceed in February 2005 due to the regional financial funding constraints. The following will be evaluated and the schematics will be revised to include the preferred alternative:

A. Provide express or managed lanes along IH 20 from IH 820 to the east, US 287 to the south and north and IH 820 north to IH 30. Appropriate lane balance will occur so the managed or express lanes will serve as a reversible managed lanes or bi-directional collective distributor system to accommodate the following connections:

    1. At the south end of US 287 there will be entrance and exit ramps from the general purpose lanes to the express or managed lanes. The ramp connections will be evaluated prior to and after the IH 20/US 287 Interchange.
    2. At the east end of IH 20 there will be entrance and exit ramps from the general purpose lanes to the express or managed lanes.
    3. Along IH 20 west of IH 820 there will not be any express or managed lanes.
    4. At the north end of US 287 there will be entrance and exit ramps from the general purpose lanes to the express or managed lanes. The ramp connections will be evaluated prior to and after the IH 820/US 287 Interchange.
    5. At the north end of IH 820 there will be entrance and exit ramps from the general purpose lanes to the express or managed lanes. The ramp connections will be evaluated prior to and after the IH 820/US 287 Interchange.
    6. At the interchange of US 287 and IH 20 at the south end of the project the express or managed lanes from each leg will combine to be the express or managed lanes along IH 20 / US 287. These express or managed lanes will continue through the interchange northward along IH 820 to connect to the north end of US 287.

B. Revise the proposed 3-lane frontage roads along IH 820, US 287 and IH 20 to remain as a 2-lane frontage roads except in the areas from the entrance and exit ramps to the cross street intersections and where traffic demand warrants 3 lanes. The ROW requirements along the frontage roads would be modified, if necessary. This revision will include geometric alignment adjustments, hydraulic analysis of proposed roadways, pedestrian sidewalks, a shared use lane on the frontage roads and cross streets for bicycles and determination of cross section.

C. Evaluate and update the ROW needs to determine if additional ROW or easements are required. Verify and update the current ownership information from the Tarrant Appraisal District website three times (before the Public Meetings and Public Hearing).

D. Provide additional design survey information for the project to define the location of new driveways from the previous schematic. Use State provided Aerials from NCTCOG to supplement building locations and survey those that would be impacted.

E. The Engineer shall use the available existing data obtained during the previous project including aerial flight and field survey information. This data will be used to revise the schematic and redefine ROW requirements. Coordinate geometry will be based on and tied into the state plane coordinate system. The Engineer shall furnish equipment, materials, supplies, and incidentals required to perform the above-mentioned engineering work. The survey will be performed using North American Datum (NAD) 83 and the appropriate surface adjustment factor supplied by the state.

F. The Engineer shall be required to complete the schematic in an orderly manner according to the milestone schedule that will be developed.

The Engineer shall develop conceptual schematics that contain the following design elements:

1. Mainlane roadway alignment.
2. Pavement edges, face of curbs and shoulder lines.
3. Typical sections of existing and proposed roadways.
4. Proposed structure locations.
5. Preliminary ROW requirements and control-of-access locations.
6. Direction of traffic flow and the number of lanes on all roadways.
7. Existing and projected traffic volumes.

110.3 Refine Conceptual Schematic Design Alternatives

110.3.1.1 Review and Develop Alternatives

The Engineer shall refine the alternatives recommended within the existing corridor for more detailed evaluation. A no-build or do-nothing alternative will be included. It is estimated up to six (6) alternatives with various modes/typical sections and up to two alignment shifts for up to three alternatives at spot locations could be considered for further evaluation. The alternatives will be developed to include:

A. Geometric Features:

- Prepare conceptual plans with general horizontal alignments on base maps at a scale of 1"=500' for the alternatives.
- Sketches of typical sections appropriate for each alternative.
- Access and location to various modes by identification of geometric features.

- Updated ROW width.
- ITS, TDM and TSM components (part of Tech Report only).
- Interim or Short-term Improvements such as bottleneck removals and intersection improvements.
- General horizontal alignment of critical elements of each alternative at a scale of 1"=200' with general vertical alignments at a scale of 1"=20', as required to substantiate the layout, structure requirements, and costs of each alternative. Such 1"=200' scale developed drawings are specifically limited to no more than 200 total feet of standard 36-inch wide conceptual plan sheets. Such plans are for review by the State and other interested parties, but are not intended to be included in the published documents for the study.

B. Hydraulic/Floodplains Evaluation Update for:

Evaluate and update impact of alternatives, including proposed bridges, piers, or other obstructions in FEMA flood plains for all stream crossings within project limits (assumed no hydraulic modeling or report for conceptual alternatives, only to size bridge /culvert opening for cost estimate purposes).

C. Operating and Maintenance Costs Update for:

1. ITS, Travel Demand Management (TDM), and TSM
2. High Occupancy Vehicle (HOV), express, and general purpose lane alternatives should include operating and maintenance cost of these facilities. HOV and express should include increase operating and maintenance of increased transit service within the corridor.

D. Capital Costs Update for:

1. General purpose, express, and HOV lane capital costs should be calculated. Unit cost for items can be provided by the State.
2. ITS, TDM, and TSM
3. ROW acquisition costs, including easements, access, utilities, damages and relocation costs.

E. Affordability and Financing Update of Data for:

1. Development of a cost constraint based on expected local, State and Federal funding sources.
2. Detailed alternative cost versus the cost constraint developed by the current regional long-range plan.
3. Identification of other possible local, State and Federal funding sources not used to calculate the cost constraint, including tolls and congestion pricing techniques.
4. Refine by considering staging or phasing of capital expenditures.

F. Mobility Update for:

The updated Technical Methodology Plan should document mobility evaluation criteria.

Engineer shall update the 30th highest hour design volume Level-Of-Service (LOS) analysis using NCTCOG's and the State TPP Division 2020 and 2040 traffic volumes for this update. The Engineer shall project year 2020 NCTCOG express and managed lanes volumes to 2040 to assimilate within TPP volumes. The Highway Capacity Manual/Software (HC-MS/HCS), VISSIM will be used to perform freeway, ramp and weaving design hour LOS analysis and provide results in a graphical format.

G. Social, Economic and Environmental Evaluation within Existing Corridor Update

The Engineer shall evaluate the alternatives to determine compatibility with and impacts to environment, community, energy and safety. A formal environmental document, EA, will be completed for the IH 820 Study. Determinations will be at the macro level.

H. Cost Effectiveness Update:

The Engineer, with coordination and approval of the Technical Work Group, shall develop an appropriate method of calculating alternative cost effectiveness measures for preferred alternative. The costs and benefits developed by the Engineer should be distributed in order to assess cost effectiveness for travel and other items such as flood damage, economics, etc.

I. Difficulty of construction and disruption during construction Update:

1. The Engineer shall evaluate the potential obstacles and disruptions during construction and develop mitigation plans with associated cost to minimize the disruption or eliminate the obstacle.
2. Construction phasing of viable alternatives – The Engineer shall prepare construction sequence layouts of viable alternatives.
3. Design the interchange connections to minimize the cost of construction/maintenance.
4. Provide an explanation of the sequence and methods of stage construction including initial and ultimate proposed treatment of crossover and ramps.

Deliverables

- Two (2) hard copies, electronic versions in PDF and Microstation DGN format, Geopak files of conceptual plans with general horizontal alignments on base maps at a scale of 1"=500' for the alternatives.
- Two (2) hard copies, electronic versions in PDF and Microstation DGN format of sketches of typical sections appropriate for each alternative.
- Two (2) hard copies, electronic versions in PDF and Microstation DGN format of layout and description of Interim or Short-term Improvements such as bottleneck removals and intersection improvements.
- Two (2) hard copies, electronic versions in PDF and Microstation DGN format and Geopak files of general layouts of critical elements of each alternative at a scale of 1"=200' with general vertical alignments at a scale of 1"=20', as required to substantiate the layout, structure requirements, and costs of each alternative. Such 1"=200' scale developed drawings are specifically limited to no more than 200 total feet of standard 36-inch wide conceptual plan sheets. Such plans are for review by the State and other interested parties, but are not intended to be included in the published documents for the study.
- HCS, VISSIM, SYNCHRO electronic input and output files for the analyses
- Two (2) hard copies, electronic versions in PDF and Microsoft Word format of draft report including the Alternative Analysis Documentation for the items described above.
- Two (2) hard copies, electronic versions in PDF and Microsoft Word format of final report including the Alternative Analysis Documentation for the items described above.
- Two (2) hard copies, electronic versions in PDF and Microstation DGN format and Geopak files of construction sequence layouts of viable alternatives at a scale of 1"=500' and summarizing technical memorandum.

110.3.1.2 Refine Travel Demand

The Engineer shall prepare updated stick line traffic diagrams depicting the 2020 traffic and the 2040 traffic for each alternative as provided by NCTCOG and coordinate with TPP Division.

Deliverables

- Updated 2020 and 2040 traffic diagrams of estimated 30th highest design hourly and daily demands.

110.3.1.3 Selection of Preferred Alternative

Based on the review of the developed alternatives, Technical Work Group, and Public Meetings the Engineer shall revise the locally preferred alternative (1 alternative). The Engineer shall revise the calculated geometric layout (i.e., design schematic) on continuous rolls (maximum 3 ft. wide and 10 ft. long) in plan and profile to a scale of 1"=200' horizontal and 1"=20' vertical. In addition to the alignment, each layout will show the location and description of all required guide signs, traffic diagrams and typical sections to describe the geometric design of the facility. Existing ROW will be determined from existing as-built plans and ROW maps to be provided by the State. Property ownership will be collected and shown on the schematic. Other requirements for the schematic are as follows:

- Location of interchanges, main lanes, ramps, frontage roads, managed/express lanes and grade separations,
- Revise vertical and horizontal alignments,
- Revise typical sections,
- Revise construction sequencing,
- Revise a detail schematic layout to comply with the State District checklist,
- Revise a guide sign layout on the schematic and coordinate with State and FHWA approvals,
- Prepare new preliminary costs estimates,
- Locations and preliminary sizing of cross drainage structure/culverts.

- The Engineer shall provide to the State, computed horizontal and vertical alignments for the entire facility including the main lanes and all ramp connections and crossing roadways. The Engineer shall provide cross-sections on rolls at 100-foot intervals. In addition, the Engineer shall set taking lines for the purpose of establishing minimum ROW and easement requirements for the facility. The Engineer shall prepare the Drainage Report and show preliminary size of crossing culverts on the schematic layouts.

Deliverables

- Two (2) hard copies on 11" X 17" paper, and electronic versions in PDF and Microstation DGN format of existing and proposed typical sections for all roadways (including cross streets) and pedestrian/bicycle elements
- Two (2) hard copies and electronic versions in Word and PDF format of the Technical Memorandum evaluating feasibility of managed lane access ramps
- Two (2) hard copies and electronic versions in Word and PDF format of the Design Summary Report, design criteria table and Design Concept Conference meeting minutes.
- Two hard (2) copies and electronic versions in PDF format of the preliminary geometric layout at 30%
- Five hard (5) copies and electronic versions in PDF format of the preliminary geometric layout at 60%

- Five hard (5) copies and electronic versions in PDF format of the preliminary geometric layout at 90%
- Nine hard (9) copies and electronic versions in PDF format of the preliminary geometric layout, selected by the State at 100%.
- With each submittal, provide all electronic files used to develop the preliminary geometric layout, along with file structure information in accordance with State guidelines. The information to provide includes but is not limited to: All Microstation DGN files used to develop horizontal and vertical alignments, all typical sections developed, shape, signing, pavement markings, proposed and existing ROW, existing utilities, bridge bents, sheet borders, topographic, GEOPAK GPK files, Design and Computation Manager (D&C) Design Database (ddb) file, and all other resource files.
- Electronic versions of the 1"=200' Plot files of the preliminary geometric layout (*.PLT format)
- Technical Memorandum summarizing the preliminary structure depth requirements and assumptions
- The Engineer shall provide an Engineering Summary Report in hard copy and on CD ROM including preliminary cost estimate, all quantity and design calculations and construction sequence description

110.3.1.4 Assess Effects to Regional Transportation Plan and Regional Congestion Management Plan Update for 2040 Traffic Volumes

The Engineer shall assist the State in re-evaluating the effects of the updated locally preferred alternative on the regional transportation plan and regional management system plans based on the 2040 traffic volumes approved by the State

Deliverables

- Three (3) hard copies and electronic versions in Word and PDF format of the updated technical documentation of effects to regional transportation and management system plans

110.3.1.5 Primary Alternative Analysis Documentation

The Engineer shall update the evaluation for the selection of the preferred alternative.

110.3.1.6 Cross Sections, Earthwork, And Retaining Walls

A. The Engineer shall develop new cross sections for the sections within the limits of the horizontal and vertical alignment revisions at 100 foot intervals.
B. Preliminary earthwork quantities shall be calculated from the cross sections.
C. Retaining wall limits shall be determined based on the design cross sections. They shall be shown and identified in the plan view.

Deliverables

- Preliminary design cross sections produced at a scale to be shown on rolls detailing existing and proposed conditions. Cross sections to be developed on 100' station intervals using GEOPAK. Each pavement layer and undercut, if any, will be shown together with items including the ROW limits, side slopes, curbs, retaining walls, and pavement cross slopes.
- Retaining walls shall be shown and identified in the plan view on the schematic.

110.3.1.7 QA/QC:

The Engineer shall provide quality assurance and quality control (QA/QC) for the work performed by the Engineer and it subconsultants document per the Engineer's QA/QC standard procedures. The submittal of the revised schematic scrolls and other documents to the State shall receive QA/QC. A senior project manager and the Engineer responsible for

directing and coordinating activities associated with the IH 820 project will perform the QA/QC function. An electronic (CD) copy of the QC documents will submitted to the State for their records.

Deliverables

- Internal QC/QA red-lines/comments with responses and the State red-lines/comments with responses at 30%, 60%, 90% and 100% submittal of the geometric layout.

110.3.1.8 Review Meetings

The Engineer shall attend up to four (4) project review meetings with officials from the State and may bring subject matter experts with them to the meetings. The anticipated meetings shall be prior to the 90% and 100% submittals and for the 90% and 100% submittal Review reconciliation. These meetings may be held in conjunction with the Technical Work Group, 120.1.1, meetings.

110.4 Geometric Design Schematics

1. The Engineer shall prepare geometric design schematic drawings in accordance with the General Requirements based on the selected preferred alternative after the basic layout, lane arrangement, and ROW requirements depicted on the conceptual schematic is approved.
2. The Engineer shall make up to four (4) submittals and corresponding revisions the geometric design schematics.

The Engineer shall develop geometric design schematic plan views that contain the following design elements:

1. Geopak calculated roadway alignments for mainlanes, ramps, direct connectors, HOV lane, managed lanes, frontage roads and cross streets at grade separations and horizontal curve data shown in tabular format. The Engineer shall use horizontal curvature based on the nearest 15 minute increment of the degree of curvature where practical. The intent of this criterion is to create uniformity in horizontal curvature. Where deviation from this criterion is requested, the Engineer shall submit the deviation request with applicable documentation for review and approval by the State's Project Manager.
2. Pavement edges, curb lines, sidewalks for all roadway improvements.
3. Typical sections of existing and proposed roadways.
4. Proposed structure locations including labeling begin and end of structure, depth of structure, abutment, bent and rail locations.
5. Existing and proposed major utilities.
6. Existing property lines and respective property ownership information.
7. ROW requirements adequate for preparation of ROW maps.
8. Control-of-access limits.
9. Existing and projected traffic volumes.
10. Location and text of the proposed mainlane guide signs and the preliminary locations for changeable message signs.
11. Lane lines, shoulder lines, and direction of traffic flow arrows indicating the number of lanes on all roadways.

The Engineer shall develop geometric schematic profile views that contain the following design elements:

1. Calculated profile grade and vertical curve data including "K" values. The Engineer shall use

vertical curvature based on quarter station VPI's where practical, and curve lengths to the nearest twenty-five (25) foot preferred, but not less than (5) foot increments. The intent of this criterion is to create uniformity in vertical curvature. Where deviation from this criteria is requested, the Engineer shall submit the deviation request with applicable documentation for review and approval by the State's Project Manager. When not practical or feasible, or where design changes would result in the need to redesign additional frontage roads, ramps, mainlanes or other roadways, minor deviation from this criterion is permitted.

2. Existing ground line profiles.
3. Grade separations and overpasses.
4. Calculated vertical clearances at grade separations and overpasses.
5. The calculated profile grade for frontage roads, connectors, ramps, and cross streets will be shown on separate Supplemental Profile rolls.

110.5 Interstate Access Justification Report (IAJR)

The Engineer shall prepare an updated Interstate Access Justification report in accordance with established FHWA procedures to document proposed changes in access to interstate highways. The request shall include an introduction that describes the proposed project along with a statement of need. The request shall address at a minimum, the eight policy requirements outlined in the FHWA policy. The access request shall provide an explanation of how the request satisfies each of the eight points in the policy requirements. Supporting analysis to illustrate how those requirements are met shall be included. The Engineer shall prepare a IAJR for IH 820 and IH 20 based on the schematic ramping scheme and ramps' LOS analysis. The IAJR will update the following:

A. Report Sections Update

Detailed documentation will be prepared by the Engineer to submit an IAJR to the FHWA. The report sections will include:

1 Purpose and Need for Revised Access

2 Alternatives that have been considered

3 Effects of Revised Access on Safety and Operations

4 Functions of Connecting Facilities

5 Consistency with Local and Regional Plans

6 Potential Future Multiple Interchange Additions

7 Coordination of Development and Transportation System

8 Environmental Considerations

9 Conclusions

B Existing Conditions

No_Build Traffic volumes developed for base and future years 2020 and 2040 will be used to prepare a detailed LOS analysis for existing roadway conditions. Traffic operations, safety, land use, socio-economic data will be reviewed, analyzed and documented following the Technical Methodology Plan from 110.13.

Traffic count data as obtained during Collection, 110.12, will be used for traffic volumes in the existing conditions. Additional traffic count data may be necessary and the Engineer shall conduct up to 25 additional counts on local roads, frontage roads and study intersections as necessary.

Crash data will be obtained by the Engineer from the State and local agencies as part of Collection of Data, 110.12. Safety analysis will be conducted for highway segments.

C Future Conditions

Future roadway conditions for the Preferred Alternative will be analyzed for the base and future years (2020 and 2040) using the approved TPP ADT Volumes and calculating the 30th highest hourly design volume with the K, and Directional Distributions factors. NCTCOG's Travel Demand Model (Model) outputs will be used to develop traffic forecasts for the alternatives considered as part of this study. NCTCOG has already provided initial model data with some of the alternatives coded in the regional network. The AM peak period and PM peak period model volumes will be used to develop AM and PM peak hour traffic forecasts Historical traffic trends will also be considered in validating the overall project traffic forecasts. Toll sensitivity analysis, if needed, will be conducted using off-model, spreadsheet based methods.

D Alternative Analysis

Traffic operations will be used for performing alternative analysis based on preferred schematic. Freeway, ramp merge, diverge, weaving sections will be analyzed along the study area using Highway Capacity Software (HCS 2010). Signalized ramp terminals and intersections and unsignalized intersections in the study area will be analyzed using SYNCHRO. A VISSIM simulation model will be developed to analyze the roadway improvements in a comprehensive manner. A VISSIM model will be developed for the five build and one no-build (future year) alternatives described in the scope of this project with a maximum of two iterations per alternative. Both AM and PM peak hour traffic conditions will be analyzed. This methodology will be in sync with the Technical Methodology Plan.

Intermodal connectivity and Travel Demand Management strategies reviewed in the Alternative Analysis document previously prepared in September 2001 will be updated to reflect the current project goals and objectives.

E QA/QC:

The Engineer shall provide quality assurance and quality control (QA/QC) for the work performed by the Engineer and it sub-consultants per the Engineer's QA/QC standard procedures. The submittal of the revised IAJR and other documents to the State shall receive QA/QC. A senior project manager and the Engineer responsible for directing and coordinating activities associated with the IH 820 MIS project will perform the QA/QC function. An electronic (CD) copy of the QC documents will submitted to the State for their records.

F Coordination Meetings

Meetings (see 120.1.1; 6 meetings) will be held with the Technical Work Group to review the IAJR update and alternative analysis.

Deliverables

Two (2) hard copies of the draft level of service analysis and IAJR and electronic versions in both Microsoft (MS) Word and PDF format, along with all input files used to develop the level of service analysis and IAJR

Five (5) hard copies of the level of service analysis and IAJR and electronic versions in both MS Word and PDF format, along with all input files used to develop the level of service analysis and IAJR

110.6 Design Exceptions

The Engineer shall identify design exceptions and waivers, and shall document the necessity for each design exception or waiver, but not prepare such design exceptions or waivers.

110.7 Value Engineering (VE) Study

The Engineer shall obtain from the State the previous VE study conducted in May 14 – 18, 2001. The Engineer and team members shall participate in a three day value engineering study. Prior to the study, the Engineer shall meet with the State to discuss study goals, project status and issues, and workshop logistics and administration.

110.8 Traffic Analysis Report

The Engineer shall prepare a traffic analysis report to supplement the previously approved IH 820 Corridor Alternative Analysis IAJR in accordance with established FHWA procedures to document proposed changes in access to interstate highways for the proposed condition. Traffic data developed under the Traffic Analyses task shall be utilized to develop the report. The traffic analysis report shall provide information to support a request for the approval of new and revised points of access on the completed section of the interstate system. The Highway Capacity Manual *(HCM) 2010* shall be used to report analysis results for the report and shall include a general summary, figures and tables including results of analysis, and an appendix. The Engineer shall make up to four submittals and corresponding revisions of the traffic analysis report.

110.9 Phasing Exhibits

The Engineer shall prepare exhibits for up to eight potential phases of the Project based on funding availability and shall make up to four submittals and corresponding revisions of exhibits.

110.10 Preliminary Cost Estimate

The Engineer shall develop a schematic level assessment of probable construction, ROW and utility cost for the project based on quantity take-off of the geometric schematic using current average unit bid prices of the State bid items. The schematic level assessment shall be determined from estimated quantities and unit costs of major construction items, including preparing ROW, pavement, structures and ROW. A contingency shall be added to the schematic assessment to account for items not listed in the schematic assessment. The Engineer shall make up to three submittals and corresponding revisions of the cost estimate.

110.11 Engineering Summary Report

The Engineer shall prepare a report to summarize the design criteria, traffic analysis, preliminary cost estimate and basis of estimate, construction sequence description, and utility conflict issues. The Engineer shall make up to three submittals and corresponding revisions of the engineering summary report.

The Engineer shall review the current data, reports and maps available to determine if additional information is needed and will coordinate with the State to obtain the information.

110.12 Collection of Data, Reports and Maps

The determination of data requirements, availability, and sources will be coordinated by the Engineer with the Project Manager. Once data needs and sources are identified, the Engineer shall contact the appropriate agencies and organizations to obtain the data. The data to be collected will be within the existing corridor and will include, but not limited to:

A. Update the Environmental, Social and Economic Data
   1. Update Current socio-economic forecasts to be obtained, including zoning and zoning changes; census data; building/housing occupancies; locations of large employers.
   2. Update currently available information on existing and planned land use.
   3. Update locations of schools, places of worship, and cemeteries in the study area.
   4. Update locations of cultural, architectural, and historic resources in the study area.
   5. Update locations of Section 4(f) and 6(f) properties in the study area.
   6. Update wetlands inventory maps.
   7. Update geographic files on wildlife habitat/migration patterns.
   8. Update geographic data files on contamination and hazardous material sites.
   9. Update available geographic data files on soil and geology.
   10. Update geographic files on bottomland hardwoods and riparian woodland.
   11. Update demographic trends from NCTCOG.
   12. Update previous data collected for the previous EA.

B. Update Transportation System Data
   1. Update existing facility operations from the State, Texas Transportation Institute (TTI), and affected cities, including current size of facilities, traffic volumes, vehicle occupancy, transit usage, alternative mode use, and travel times.
   2. Updated transit operations from Fort Worth Transportation Authority (The T), existing and proposed services (including ridership, routes, fares, etc.).
   3. Updated Transportation plans from the State, The T, NCTCOG, North Texas Tollway Authority (NTTA), and local governments, including committed improvements and travel forecast.
   4. Updated Transit Service and Facility Planning from THE T and RAILTRAN, including revised Service Plan and Rail service and station locations.
   5. Update Pertinent data on existing and planned major utilities and railroad facilities.

C. Hydrology and Hydraulic Analysis Data
   Available FEMA Flood Insurance Rate Map (FIRM) and profile data available in the study area.

D. Obtain previous corridor studies, reports, and plans conducted by other agencies and groups.

110.13 Update the Technical Methodology Plan (September 2000)

As a part of the original IH 820 MIS, a Technical Methodology Plan was prepared in September 2000. The plan included Evaluation context and criteria, alternatives screening criteria, detailed methodology and study goals and objectives. This plan shall be reviewed and updated by the Engineer including the latest State standards as applicable to the current scope of the project. The Technical Methodology Plan Update will identify detailed level alternative evaluation criteria and document technical methodologies and procedures for alternative analysis evaluation. Included will be quantitative/qualitative criteria/measure of effectiveness summarized in a comparative form for each issue. Alternative analyses for traffic operations will be conducted using one software or a combination of software such as VISSIM, SYNCHRO and HCS. VISSIM and HCS will be used for analyzing highway segment density and level of service for basic freeway segments, merge and diverge areas and weaving sections. If needed, frontage road sections will also be analyzed using VISSIM. SYNCHRO will be used for analyzing queue lengths and level of service at signalized and unsignalized intersections including ramp terminal intersections.

QA/QC:
The Engineer shall provide quality assurance and quality control (QA/QC) for the work performed by the Engineer and it sub-consultants per the Engineer's QA/QC standard

procedures. The submittal of the revised Technical Methodology Plan to the State shall receive QA/QC. A senior project manager and the Engineer responsible for directing and coordinating activities associated with the IH820 MIS project will perform the QA/QC function. An electronic (CD) copy of the QC documents will submitted to the State for their records.

Deliverables

- PDF copy of all QC documents
- Updated Technical Methodology Plan (3 Printed copies, 1 PDF copy and 1 Electronic (CD/DVD) copy)

110.14 Design Visualization – 3D Computer Modeling

The Engineer shall prepare a topographically accurate 3D computer model of Interstate Highway (IH) 820 heading South at Meadowbrook Drive to the IH 820/ United States Highway (US) 287 Interchange, this includes a 360 degree view of the IH 820/ US 287 Interchange.

In addition to this, a Northbound visualization shall be prepared of US 287 by the Engineer, starting from Sublett Road through the US 287/ IH 20 interchange, this includes a 360 degree view of the US 287/ IH 20 interchange, continuing Westbound to US 287/ IH 20/ IH 820 Interchange, a 360 degree view of the US 287/ IH 20/ IH 820 shall be completed, continuing Northbound, through the US 287/ IH 820 Interchange continuing Northbound on US 287 and stopping at Bishop St.

Another camera shall be created by the Engineer that travels Eastbound on IH 20 at Forest Hill Drive, continuing on through the IH 20/ Hwy 287/ IH 20 Interchange, then through the IH 20/ US 287, and stopping at Kelly Elliott Road.

The Engineer shall also produce a set of rendered orthographic plots of the entire project boundary.

The computer model prepared by the Engineer shall accurately depict the geometric design of the proposed improvements Interstate for IH 820, US 287, and IH 20 and associated interchanges. Engineering judgment shall be used for definition of slope, retaining wall, bridge abutment placement, and other physical features that may not be readily apparent from the design schematic. The computer model shall also incorporate existing features in the corridor out to a distance of approximately 750 feet either side of the roadway centerline, but up to 1250 feet as needed.

The computer model prepared by the Engineer is intended to be used by the State for public information purposes. Based on the modeling, Engineer shall provide still-shot 3D views from various perspectives, and full-motion animated sequences recorded to DVD. The content of the stills and animated sequences is to be determined collaboratively with the State.

Deliverables

3D Modeling and Animations
Provide staged deliveries/reviews/revisions during project development.
Coordinate acquisition of needed data
Coordinate with the client and interested parties (up to two meetings) on development of content, sequences and text placement.

Project Set-Up / CAD Data Conversion
Engineer shall provide 3D roadway and ramp centerlines, striping, typical sections, planimetrics, base digital orthoaerial photography, and 3D contour data for the proposed roadway design.
Collection of CAD data (MicroStation + Geopak)
Interpretation of all supplied CAD data
Conversion of relevant data

Additional planimetric creation for corridor buildings, as necessary.

1 Modeling and Animation
Modeling of 3D topography based on provided CAD data
Generic creation of surrounding neighborhoods
Landscape creation (existing features)
Modeling of notable buildings around major interchanges
Modeling of proposed grading along the roadway

2 Texture Development
Color Aerial photography (The State will supply appropriate data)
Field digital photography (building textures around major interchanges)
Surrounding vegetation

3 Animation
Camera development (i.e. interchange overviews, "helicopter view" flight of modeled roadway, and various stills)
Passively Animated traffic

4 Editing/Compositing
Compositing final footage
Format preparation for DVD

5 DVD Authoring
Interactive menu development
Graphic design of packaging and menus
Master DVD creation

6 Orthographic Plots
Creation of Orthographic cameras for high resolution plots of the entire project area

Deliverables:
Provide three (3) scheduled deliveries: 60% draft, 90% draft, and final delivery
Provide up to five (5) individual high-resolution digital images (capable of being printed or placed into a PowerPoint presentation.)
Prepare a master DVD featuring approximately 15 minutes of full-motion animation of the defined project area at a minimum of High Definition (HD), equal to 1920 x 1080 pixels in resolution.
Prepare five duplicates of the DVD for a total of six (6) copies provided to the client.
Prepare orthographic plots of the defined project area
Provide the 3D CAD model of the proposed roadway on CD

110.15 Construction Sequence

The Engineer shall consider the requirements for construction and traffic control throughout the development of schematic design to ensure that the proposed design can be constructed.

Summary of Function Code 110 Deliverables:

In conjunction with the performance of the foregoing services, the Engineer shall provide the following draft and final documents and associated electronic files for each submittal. Electronic files shall be furnished to the State on a CD or DVD Recordable media.

- Design Summary Report and Criteria Table

- Conceptual Design Alternative roll plots and matrix
- Conceptual Design tabular summary
- Schematic traffic diagrams
- Geometric Design Schematic (1 inch = 200 feet)
- Traffic Analysis Report
- Phasing Exhibits
- Preliminary Cost Estimate
- Engineering Summary Report
- Design files in MicroStation (.dgn and gpk) and .dtm or .tin, format.
- Design cross sections in .dgn and PDF format
- Updated data in PDF format and native electronic files

FC 120 – Social, Economic and Environmental Studies and Public Involvement:

120.1 Technical Work Group

The Engineer shall assist the Project Manager to reconvene the Technical Work Group. This group will be composed of representatives from agencies and local governments which have a role in funding, permitting and implementing any proposed transportation improvements. This group offers policy decisions and guides the technical development of the study. The group will meet to receive and assess reports on progress, comment on the schedule, coordinate with respective agencies and provide oversight of major activities associated with the Schematic/EA/IAJR.

A. The Engineer shall assist the State in the preparation for and conduct up to six (6) Technical Work Group meetings. The Engineer shall prepare an agenda before each meeting, with the approval of the State's Project Manager, The agenda and minutes from the previous meeting will delivered by the State to each Technical Work Group member before each meeting.

B. The Engineer shall prepare information materials, including PowerPoint presentations, exhibits and handouts, for the Technical Work Group meetings. The exhibits and text describing alternatives will be based upon information developed throughout the study.

C. Document results of the Technical Work Group meetings in the form of meeting minutes identifying key issues and factors to be considered further.

Deliverables	Originals	Printed Copies per Meeting	Electronic (CD) Copy
• Technical Work Groups Agenda	1	30	0
• Technical Work Group Meeting Minutes	1	30	0
• Summary of Progress to Date	1	30	0
• Meeting handouts, exhibits, etc. as needed	1	30	0
• Electronic (CD) file of all materials	1	1	1
• Public Involvement Plan	1		1

- PowerPoint presentations, and Project Coordination folder (3-ring binder) for Technical Work Group meetings with local, state, and federal agencies and officials. The Engineer shall provide hard copies for these meetings and electronic versions in MS Word and PDF format.

120.2 Environmental Documentation

Each environmental service provided by the Engineer shall have a deliverable. Deliverables shall summarize the methods used for the environmental services, and shall summarize the results achieved. The summary of results shall be sufficiently detailed to provide satisfactory basis for thorough review by the State, and (where applicable) agencies with regulatory oversight. All deliverables shall meet regulatory requirements for legal sufficiency, and shall adhere to the requirements for reports enumerated in the State's National Environmental Policy Act (NEPA) Memorandum of Understanding (MOU).

120.2.1 Quality Assurance/Quality Control Review

For each deliverable, the Engineer shall perform quality assurance quality control (QA/QC) reviews of environmental documents and on other supporting environmental documentation to determine whether documents conform with:

1) Current Environmental Compliance Toolkit guidance published by the State's Environmental Affairs Division and in effect as of the date of receipt of the documents or documentation to be reviewed;

2) Current state and federal laws, regulations, policies, guidance, agreements, and memoranda of understanding between the State and other state or federal agencies; and

3) FHWA and AASHTO guidelines contained in "Improving the Quality of Environmental Documents, A Report of the Joint AASHTO and American Council of Engineering Companies (ACEC) Committee in Cooperation with the FHWA" (May 2006) for:

   a) Readability, and

   b) Use of evidence and data in documents to support conclusions.

Upon request by the State, the Engineer shall provide documentation that the QA/QC reviews were performed by qualified staff.

120.2.2 Deliverables shall contain all data acquired during the environmental service. All deliverables shall be written to be understood by the public and must be in accordance with the State's Environmental Toolkit guidance, current guidelines, policies and procedures.

120.2.3 Electronic versions of each deliverable must be written in software which is compatible to the State and must be provided in a changeable format for future use by the State. The Engineer shall supplement all hard copy deliverables with electronic copies in searchable Adobe Acrobat™ (.pdf) format, unless another format is specified. Each deliverable shall be a single, searchable .pdf file that mirrors the layout and appearance of the physical deliverable. The Engineer shall deliver the electronic files on CD-R or CD-RW media in MS Windows format.

120.2.4 When the environmental service is to apply for a permit (e.g., United States Coast Guard (USCG) or USACE, the permit and all supporting documentation shall be the deliverable.

120.2.5 Submission of Deliverables

1) Deliverables shall consist of reports of environmental services performed in addition to an EA document, when applicable.

2) The deliverables shall go through an internal quality assurance and quality control review before being sent to the State.

3) All deliverables must comply with all applicable state and federal environmental laws, regulations and procedures.

4) On the cover page of each EA, FONSI, environmental impact statement (EIS), and record of decision (ROD) prepared under the authority granted by the State's NEPA MOU, and for any memorandum corresponding to any CE determination it makes, the Engineer shall insert the following language in a way that is conspicuous to the reader or include it in a CE project record:

> "The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by The Texas Department of Transportation (TxDOT) pursuant to 23 U.S.C. 327 and a Memorandum of Understanding, dated December 16, 2014, and executed by FHWA and TxDOT."

120.2.6 The State shall provide the State's, and other agency comments on draft deliverables to the Engineer. The Engineer shall revise the deliverable:

1) to include any State commitments, findings, agreements, or determinations (e.g., wetlands, endangered species consultation, Section 106, or Section 4(f)), required for the Transportation Activity as specified by the State;

2) to incorporate the results of public involvement and agency coordination;

3) to reflect mitigation measures resulting from comments received or changes in the Transportation Activity; and

4) to include with the revised document a comment response form (matrix) in the format provided by the State.

120.2.7 All hardcopy photographs shall be approximately 3.5" x 5" color presentation printed on matte finish photographic paper or 3.5" x 5" color presentation printed on matte white, premium or photo quality laser or inkjet paper. All photographs shall be well focused and clearly depict details relevant to an evaluation of the project area. Provision of photographs shall be one original print of each image or electronic presentations of comparable quality. Comparable quality electronic photograph presentations shall be at least 1200 x 1600 pixel resolution. Photographs shall be attached to separately labeled pages that clearly identify project name, project identification (ID) number, address or Universal Transverse Mercator (UTM) of resource, description of the picture and direction of the photographic view. In addition to the hard-copy prints, an electronic version of each will be submitted with the same identification information as the hard-copy.

120.3 Risk Assessments, Project Scope and Technical Reports

The Engineer shall prepare project scoping documents in accordance with 43 TAC §2.44. The Engineer shall utilize forms that have been developed by the State. The project scope shall be used early in the project development process to provide an outline for a collaborative agreement between the State regarding the specific requirements and expectations for the project.

Before preparing the technical analyses detailed below, the Engineer shall prepare Risk Assessments, a Biological Evaluation (BE) Form, Hazardous Materials Initial Site Assessment (ISA) and Project Coordination Requests (PCRs) for archeological resources and historical properties.

Definition of technical report for environmental services: a report detailing resource-specific

studies identified during the process of gathering data to prepare an environmental document.

Technical reports shall be produced before the environmental document (e.g. EA) is prepared in order to identify issues early in the process. The State will determine which reports will be necessary for any given project. Technical reports must be prepared for the State with sufficient detail and clarity to support environmental determination(s). The environmental document will reference the technical reports.

Environmental technical reports will include appropriate National Environmental Policy Act of 1969 (NEPA) or federal regulatory language in addition to the purpose and methodology used in delivering the service. Technical reports will include sufficient information to determine the significance of impacts. The technical reports prepared for the I-820 project include below:

- Purpose and Need
- Water Resources
- Air Quality including MSAT
- Archeological Resources
- Bicycle and Pedestrian Accommodation
- Community Impacts
- Biological Resources
- Waters of the U.S.
- Hazardous Materials
- Historic Resources
- Indirect and Cumulative Impacts
- Public Involvement
- Traffic Noise
- Transportation Conformity Report Form
- U.S. DOT Section 4(f)

On the cover page of each biological evaluation or assessment, historic properties or cultural resources report, section 4(f) evaluation, or other analyses prepared under the authority granted by the State's NEPA MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader or include in a CE project record:

"The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."

120.4 Environmental Assessment (EA) Content and Format

120.4.1 The EA shall meet the requirements of 23 CFR §771.119 and TAC, Title 43, Part 1, Chapter 2 and the State's Environmental Handbook for EA's. The EA content shall be in sufficient detail to meet regulatory requirements for legal sufficiency.

120.4.2 Exhibits to be included in reports or EAs shall not exceed 11" by 17," and shall be in color. Text pages shall be 8.5" by 11". Exhibits and text in reports or EAs shall be neat and reproducible via photocopying without loss of legibility.

120.4.3 The EA shall use good quality maps and exhibits, and shall incorporate by reference and summarize background data and technical analyses to support the

concise discussions of the alternatives and their impacts. This includes the preparation of the EPIC Sheet and APD StageGate Checklist. The Engineer shall include the following contents in the EA:

1) Cover and Cover Sheet: The cover and inside cover sheet of the document must include the following information:
   a) Title: Environmental Assessment for [Project Name]
   b) Roadway and Limits
   c) District and County
   d) Control Section Job (CSJ)
   e) by the Texas Department of Transportation
   f) Also list any joint and cooperating agencies
   g) Month and Year
   h) In accordance with the State's NEPA MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader:

      "The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."

      For federally funded projects the name "U.S. Department of Transportation, Federal Highway Administration" should appear on the cover.
2) Table of Contents
   a) Enumerate chapter headings and subheadings
   b) List of tables
   c) List of figures
   d) Appendices
3) Purpose and Need

Follow the guidance in the FHWA website (http://www.environment.fhwa.dot.gov/projdev/tdmneed.asp) on purpose and need.

a) Introduction

Provide general information about the proposed project or action.

i. Briefly describe the proposed project's history; include any measures taken to date, such as feasibility studies, early coordination and planning, and a discussion about the proposed project's relationship to regional and statewide planning and transportation plans (logical termini and independent utility, linkage to system, capacity, and projected traffic and transportation demand).
ii. Logical Termini and Independent Utility
   1. Logical Termini.
      a. Additional travel lanes should be proposed only between rational endpoints.
      b. A rational endpoint is typically a state or federal system roadway, although local thoroughfares may be substituted when state or federal roadways are not appropriate.
      c. County limits, county lines, or water bodies are not logical termini, regardless of whether the termini match the construction limits.
      d. The logical termini should reflect the project's need.

Follow guidance on determining logical termini found on the FHWA website (http://environment.fhwa.dot.gov/projdev/tdmtermini.asp) and in the TxDOT On-Line *Environmental Compliance Toolkits.*

2. Independent Utility
   a. Additional travel lanes should be a reasonable expenditure and should "stand alone," not requiring additional transportation improvements to complete.
   b. The project must be able to function on its own without further construction of an adjoining segment.

      Example: SH 6 is planned to expand from four 12-foot lanes to six 12-foot lanes between SH 288 and IH 45. This typical section will match the six-lane section of SH 6 at IH 45. These limits address the congestion on SH 6 resulting from recent development.

      Follow guidance on independent utility in the TxDOT On-Line *Environmental Manual.*

iii. Bicycle and Pedestrian Accommodations

1. The State is committed to proactively plan, design, and construct facilities to safely accommodate bicyclists and pedestrians on appropriate facilities.
2. It is critical that bicycle and pedestrian accommodations be considered and discussed as the purpose and need of a project is defined during the environmental process, taking into consideration existing and anticipated bicycle and pedestrian facility systems and needs.
3. In the environmental document, the district should include a discussion in the project description of proposed bicycle and pedestrian facilities. If no bicycle or pedestrian facilities are planned, the document should state why no such facilities are planned.
4. PS&Es should also ensure that proposed designs include these accommodations, if applicable, and are constructed according to Texas Accessibility Standards and Americans with Disabilities Act Accessibility Guidelines (TAS and ADAAG).
5. If these modes are not accommodated, the document should justify the exceptional circumstances that preclude these provisions.
6. For all urban sections, regardless of the type of improvement, the following guidance is provided:
   a. For construction projects within existing ROW and when the scope of work is limited to within the roadway typical section, the project plans should:
      i. remove barriers to accommodate pedestrians according to TAS and ADAAG and the State's PED standard; and
      ii. accommodate bicyclists by restriping the existing roadway typical section to provide a 14-foot-wide curb lane, when practical.
   b. When restriping existing pavement to achieve a 14-foot-wide shared-use lane, the minimum lane widths and curb offsets for the appropriate roadway classification defined in the State's Roadway Design Manual should be maintained. Local city and Metropolitan Planning Organization bicycle and pedestrian plans should also be considered.
7. For construction projects within existing ROW but when the scope of work involves pavement widening, the project plans should:
   a. accommodate bicyclists by widening the pavement to either provide a 14-foot wide curb lane or a 5-foot bicycle lane;
   b. Include necessary work to ensure all existing ADA curb ramps comply with current standards; and
   c. reconstruct or add sidewalks and crosswalks to ensure a continuous ADA compliant pedestrian route.
8. For full reconstruction or new construction projects in urban areas, where new ROW is acquired, the project plans should provide the desired geometric values shown in the *Roadway Design Manual* for each facility type. The inclusion of bicycle and pedestrian facilities should be included in the project plans as appropriate.
9. For rural roadway construction, the project plans should accommodate bicyclists by striping for a 14-foot-wide outside shoulder, when practical.

10. When restriping existing pavement to achieve a 14-foot-wide shared use lane, the minimum lane widths and curb offsets for the appropriate roadway classification defined in the State's *Roadway Design Manual* should be maintained. Local city and Metropolitan Planning Organization bicycle and pedestrian plans should also be considered.

b) Purpose of the Project
   i. The purpose may be thought of as the "what" – the essential purpose(s) that the project is expected to address to correct the unsatisfactory condition(s).
   ii. The purpose statement begins with defining the solution without being project specific.
   iii. The purpose statement should include a list of objectives that meet each of the needs identified.

c) Need for the Project
   i. This section identifies and describes the proposed action, transportation problem(s) or other needs. This section establishes the rationale for the project. Resource agencies often focus on this section, so it must be carefully crafted with defensible, supportable information.
   ii. The need may be considered the "why" -- the problem(s) or unsatisfactory conditions that currently exist or are expected to exist.
   iii. Express the need in terms of the problem, not the solution.
   iv. In general, this section should:
      1. Clearly demonstrate that a need exists and should define it in terms understandable to the public.
      2. Clearly describe the problems that the proposed action will correct.
      3. Form the basis for the "no action" discussion in the "alternatives" section, and assist with the identification of reasonable alternatives and the selection of the preferred alternative.
   v. More specifically, this section should consider including the following, either in the main body or as attached exhibits or appendices:
      1. Charts, tables, maps and other illustrations (i.e., typical cross-sections and photographs) as presentation techniques.
      2. Project Status: Briefly describe the project history, including actions taken to date, other agencies and governmental units involved, actions pending, and schedules.
      3. System Linkage: Is the proposed project a "connecting link"? How does it fit into the system?
      4. Capacity: Is the capacity of the present facility inadequate for the present traffic? For projected traffic? What capacity is needed? What is the level of service for existing and proposed facilities?
      5. Transportation Demand: Include relationship to any statewide plan or adopted urban transportation plan, along with an explanation of the project's traffic forecasts that are substantially different from the estimates from the metropolitan planning organization (MPO) or other regional planning process.
      6. Legislation: Is there a federal, state, or local governmental mandate for the action?
      7. Social Demands or Economic Development: What projected economic development and land use changes indicate the need to improve or add to the highway capacity (new employment, schools, land use plans, and recreation)?
      8. Modal Interrelationships: How will the proposed facility interface with and serve to complement the various modes of transportation (airports, rail facilities, port facilities, and mass transit services)?
      9. Safety: Is the proposed project necessary to correct an existing or potential safety hazard? Is the existing accident rate excessively high? Why? How will the proposed facility improve it?

         Roadway Deficiencies: Is the proposed project necessary to correct existing roadway deficiencies (substandard geometrics, load limits on structures, inadequate cross-sections, high maintenance costs)? How will the proposed project improve any of these conditions?

d) Planning Process
   i. Give a brief history of the scoping process and all other public involvement, coordination, and previous planning efforts (corridor or subarea plans) relevant to the current project.
   ii. Discuss the related studies and relevant documents, including state and local long- range plans, comprehensive plans, land use plans, transportation plans, and other thoroughfare and

mobility plans and their context for the proposed project.
iii. If the proposed project is not reflected in the state or regional plan, explain the basis for the proposed project.
iv. List and justify issues for detailed study as determined by the scoping process or previous plan-level studies that meet the State's requirements for public involvement and agency coordination.
v. List and justify issues eliminated from detailed study based on the scoping process or previous plan-level studies that meet the State's requirements for public involvement and agency coordination.

e) Public Involvement
i. Required public involvement (PI) is not tied to State classification, but rather to the proposed action.
ii. Follow the most recent PI requirements. Currently the Texas Administrative Code (TAC) requires at least a Notice Affording an Opportunity for a Public Hearing (NAOPH) on any added capacity project.
iii. Summarize any PI in the environmental document, including dates, number of attendees, locations, and common comments. Also summarize how public comments were addressed. Include photos of displays and venue, as appropriate.
iv. Summarize resource agency and public scoping meetings conducted.
v. Consider establishing goals and objectives for public involvement that reach beyond meeting regulatory requirements to ensure that:
1. Communication between the project sponsor and the public is two-way and is initiated as early as possible in the project development process so that public concerns can be incorporated into design to the extent possible;
2. The PI list for the project includes all appropriate stakeholders (e.g., people, businesses, and limited English proficiency (LEP) populations in affected communities and consulting agencies); and
3. all stakeholders are aware of the proposed project and understand what is proposed.

f) Cost and Funding Source
i. Describe the project funding. Do not assume that tolling is the only option for funding a project. Describe all conventional sources of funding and methods of setting priorities for funding from tax revenues.
ii. A project level analysis is required for all projects proposed as toll roads.
iii. For projects within large urban MPOs, the impacts of tolling from a system and network perspective need to be addressed in the cumulative analysis section of the document, per the FHWA and TxDOT Joint Guidance for Project and Network Level Environmental Justice, Regional Network Land Use, and Air Quality Analysis for Toll Roads, April 23, 2009.

g) Applicable Regulatory Requirements and Required Coordination
i. List and describe applicable regulatory requirements.
ii. List and describe required coordination with the appropriate agencies.

4) Alternatives
a) Reasonable Alternatives
i. This section describes the alternatives selected, as well as those eliminated, and describes the process that was used to develop, evaluate, and eliminate potential alternatives, based on the defined purpose and need of the project. Describe the following:
1. All reasonable alternatives, including those brought forth by the public, consultants or resource agencies;
2. Other alternatives that were eliminated from detailed study;
3. How alternatives were selected for detailed study;
4. The reasons alternatives were eliminated from consideration; and
5. How the alternatives meet the need for the project and avoid or minimized environmental impacts.
ii. If tolling is proposed for an alternative, this must be clearly described.
iii. All reasonable alternatives should be discussed at a comparable level of detail.
iv. The range of reasonable alternatives should begin with the "No Build" Alternative.
v. A preferred alternative should be selected as a result of a rational screening process based on

meeting project objectives, community and natural environmental impacts, cost, and other considerations, which should be explained in the EA. A matrix to compare the alternatives is recommended.

NOTE: Alternatives are reasonable if they have developed in a manner that includes the opinions of other people and organizations, and sound professional judgment is used. One of the keys to legal sufficiency is to not be arbitrary and capricious in deliberations and decision-making.

b) "No Build" Alternative

i. The "no-build" alternative is always included as a baseline against which other alternatives can be compared.
ii. As part of the no-build alternative, short-term minor reconstruction that maintains continuing operation of the existing roadway, such as safety upgrading and maintenance, can be considered.

c) Build Alternatives

i. When there is a large number of build alternatives, only a representative sampling of the most reasonable examples covering the full range of alternatives must be presented.
ii. Determining the number of reasonable build alternatives in the EA depends on the project and the facts and circumstances of each case.
iii. Describe the various build alternatives using maps or other visual aids, such as photographs, drawings, typical sections, or sketches.
iv. A clear understanding of each alternative's termini, location, costs, and the project concept should be detailed including:
    1. Number of lanes
    2. ROW (ROW) requirements
    3. Median width
    4. Access control.
v. Identify the status and extent of the different types of ROW that may be used for the alternatives under consideration for the project:
    1. Land that has been or will be reserved or dedicated by local government(s).
    2. Land to be donated by individuals.
    3. Land to be acquired through advance or hardship acquisition.

    NOTE: Where such lands are reserved, the EA should state that the reserved lands will not influence the alternatives to be selected.
vi. Development of more detailed design for some aspects (e.g., USACE or USCG permits, noise factors, and wetlands) of one or more alternatives may be necessary during preparation of the EA to evaluate impacts or mitigation measures or to address issues raised by other agencies or the public.
vii. The choice of a preferred alternative is made following the evaluation of alternatives, early coordination, engineering analyses and environmental studies. Districts usually make this decision.
viii. ROW Requirements
    1. Discuss ROW and all easements (existing and anticipated, permanent and temporary construction easements). If the project requires additional ROW on an existing highway, appropriate public involvement is required (as outlined in the Texas Administrative Code and the TxDOT On-Line Environmental Manual. It is the State's ROW Acquisition Section policy to follow the Uniform Relocation and Real Property Acquisition Act of1970 (Uniform Act) and FHWA's requirements related to the Uniform Act even if no federal funds are included in the project funding.

       At a minimum:
       a. Describe existing ROW (in feet).
       b. If no additional ROW is needed, state this in the document.
       c. Describe the proposed ROW needed in acres, including the number of parcels (if available).

d. Explain where the proposed ROW will occur (which side of the roadway, where in the project area). State whether there are or are not any residential and commercial displacements.
e. Describe by location and acreage, any temporary and permanent easements needed. Describe the purpose of the easement(s) (e.g., utilities). Show this information in typical sections and schematics.
f. If no additional easements, permanent or temporary construction easements, are needed, state this in the document.
g. Disclose any ROW that has been donated or, if purposed, disclose whether there were willing sellers.
h. If there are early acquisitions, include the information per ROW guidance provided by FHWA on December 6, 2008.
i. For ROW acquisition, FHWA requires the document to include a statement that the acquisition was done in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended.

2. Demonstrate Uniform Act compliance for projects with early ROW acquisition. Describe previous existing ROW acquisition as per the December 2007 FHWA memo to the Director of the State's Environmental Affairs Department. For ROW purchased after 1971, document Uniform Act compliance. This document will be provided by the State.
3. For projects without early acquisition, state that no advanced acquisition has taken place. Describe the acreage to be acquired and any displaced properties, including residential, businesses (include type of business and any effects on the community if the business cannot continue), public properties, and special use properties. Also include market data that provide information for the potential for displaced properties to relocate, and state that the Uniform Act will be followed.

5) Environmental Impacts of the Proposed Action and Alternatives

a) Description of the Existing Environment

Describe the project area in terms of the existing human (social, economic, and community) and natural environmental setting for the area affected by all alternatives presented in the EA. This section should also identify environmentally sensitive features, including potentially vulnerable neighborhoods and community facilities in and adjacent to the project area. The existing conditions for the following resources and issues should be considered:

i. Land Use

1. Existing Land Use
   a. Describe the setting of the project (urban, rural).
   b. Describe land uses such as homes, businesses, schools or parks to provide an accurate picture of the project area.
   c. Existing land uses should be field-verified and mapped.
   d. Identify neighborhoods by name and boundaries, if available.
   e. What is the natural setting of the project area? At a minimum, describe the type of vegetation, any water courses and any resources that will help provide a complete overall picture of the project area.
2. Currently Planned and Proposed Land Uses
   a. Describe current subdivision, zoning, building permit, and on-site wastewater disposal (i.e., septic tanks) activity, as appropriate, in and adjacent to the project area.

b. Describe direct land use changes by acreage. This should include a discussion of the current uses and zoning for land that will be acquired for ROW.
c. New location, added capacity, and change in access projects need to address the land use impacts from increased or altered accessibility to the area. This needs to be further expanded in the indirect impacts section when examining the increased desirability of a more accessible area to developers.

3. State, Regional, and Local Government Plans and Policies

a. State whether the proposed project is consistent with the Texas Statewide Long- Range Transportation Plan 2035 (SLRTP). http://www.txdot.gov/public_involvement/transportation_plan/report.htm
b. Describe any existing corridor or subarea plans that would include the proposed project and whether the proposed project is consistent with those plans and whether those plans met the State's requirements for public involvement and agency coordination, as well as currency (less than five years old) to qualify for incorporation by reference in the environmental document for the proposed project.
c. Land use plans by jurisdictions should be shown to illustrate compatibility with local plans and policies. Include future land use and transportation plan maps from the respective plans.
d. Describe land use, transportation, environmental, and other community goals, objectives, and policies of applicable local government and regional (i.e., MPO) plans for the project area.
e. Describe how the proposed project is or is not consistent with state and local comprehensive plans, transportation plans, and other mobility plans.
f. If the project scope is only a portion of the project scope of state and local transportation plans, disclose the reasonably foreseeable future phases of the facility shown in the plans and include this eventuality in the environmental analysis.
g. Is the project scope in the document consistent with the project scope in the Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP) and, if applicable, the project scope in the Metropolitan Transportation Plan (MTP) and Regional Transportation Plan (RTP) for all CSJs?
h. Check the following:
    i. CSJ number
    ii. Roadway
    iii. Limits, and
    iv. Project description (i.e., type of project, number of lanes, and length)
i. Address the following questions in the environmental document:
    i. Is the letting year in the document consistent with the letting year in the TIP and STIP and if applicable the letting year in the MTP and RTP?
    ii. Is the project cost in the document within reasonable cost consistency of the project cost in the TIP and STIP and if applicable the project cost in the MTP and RTP?
    iii. Does the document indicate that the project is included in the TIP and STIP and the timeframe of the TIP and STIP?
    iv. If applicable, does the document indicate that the project is in the MTP and RTP and the timeframe of the MTP and RTP?
    v. If the project includes more than one CSJ, does the document indicate that all project CSJs are included in the TIP and STIP and if applicable in the MTP and RTP? Does the project demonstrate how the different CSJs in the planning documents cover the entire project limits and project scope as described in the environmental document?
    vi. Does the document include the funding source, the reasonable total project cost, the date of the cost estimate, and estimated date of completion (open to traffic)? Reasonable total project cost includes preliminary engineering, environmental studies, ROW, utilities, construction and mitigation costs.
    vii. Does the document include copies of the appropriate pages of the TIP and STIP and if applicable the MTP and RTP as an appendix?
    viii. Does the document summarize the STIP information, include a copy of the page from the STIP, indicate the current letting year, funds and total project cost?
j. Farmlands
k. Community Impact Assessment
l. Air Quality
m. Traffic Noise
n. Water Quality

o. Floodplains
p. Wetlands and Other Waters of the U.S.
q. Vegetation and Wildlife
r. Threatened and Endangered Species
s. Cultural Resources
t. Hazardous Materials
u. Visual and Aesthetic Qualities: Describe the visual quality of current conditions in accordance with applicable provisions of FHWA's Guidelines for the Visual Impact Assessment of Highway Projects (January 2015). Are there any unique visual or aesthetic qualities to the project area?
v. Airports: The document must address and describe any airports located within the vicinity of the project.

b) Environmental Impacts of the Proposed Project and "No-Build" Impacts
This section includes the probable beneficial and adverse human (social, economic, and community) and natural environmental effects of the proposed project and describes the measures proposed to mitigate adverse impacts. This information is used to compare the proposed project and its impacts with the "No Build" alternative under each topic listed below in ii.

NOTE: The narrative of the proposed project impacts should not use the term "significant" in describing the level of impacts. If the term "significant" is used, it should be consistent with the Council on Environmental Quality (CEQ) Guidelines and supported by facts.

i. The impacts and mitigation measures of the preferred alternative should be described in detail in order to elaborate on information and to make firmer commitments.
ii. The following information should be included in the EA for the preferred alternative, not necessarily in this order (See numbers 120.4 through 120.31 for the scope to be followed for each respective topic.)
1. Land Use Impacts
2. Community Impacts Assessment
3. Historic Properties and Archeological Resources
4. Air Quality
5. Traffic Noise
6. Water Quality
- Determining Impacts to Waters of the U.S. including Wetlands
- Floodplains
- Stormwater Permits
- U.S. Army Corps of Engineers Permits
- U.S. Coast Guard Section 9 Permit
- Water Body Modifications and Wildlife Impacts

7. Threatened and Endangered Species
8. Invasive Species
9. Beneficial Landscape
10. Farmland Impacts
11. Hazardous Materials
12. Regional Toll Analysis (if required)
13. Public Involvement
14. Section 4(f) or Section 6(f) (if required)

6) Indirect and Cumulative Impacts Analysis
a) Indirect Impacts Analysis (TxDOT's current Indirect Impacts Analysis Guidelines)
b) Cumulative Impacts Analysis ((TxDOT's current Cumulative Impacts Analysis Guidance)
7) Environmental Permits Issues and Commitments (EPIC) s - Mitigation and Commitments
a) Commitments need to be included EPIC section.
b) Finalize PS&E EPIC sheet for incorporation into plans (and contractor bidding documents) to ensure that implementation occurs through proper execution of PS&E contract.
8) Agency Coordination
9) Conclusion

a) Preferred Alternative
   i. Identify which of the alternatives considered is the preferred alternative.
   ii. Explain how the preferred alternative meets the objectives of the project purpose to meet the stated needs.
   iii. Explain technical and economic considerations in the selection.
b) Supporting Rationale for the Preferred Alternative
   i. Explain environmental considerations, specifically focusing on the environmental benefits incorporated into the design of the alternative.
   ii. Explain the status of permits issued or pending that are required by federal, state, county, and city agencies.
   iii. State that the preferred alternative complies with all environmental laws and applicable Executive Orders, or provide assurance that these requirements can and will be met at the appropriate times.

10) References
11) List of Abbreviations
12) Appendices

The appendices should include:

a) County road map showing project location, USGS Topographical Map, Aerial Map
b) Typical sections (including dimensions) for existing and proposed conditions.
c) Schematics and project layouts
d) Photographs (including natural resources and potential historic resources)
e) Survey Results
f) Technical Memorandum Findings
g) Record of any comments and coordination
h) Copy of TIP and STIP page(s)
i) Technical Reports

120.5 Land Use and Community Impacts

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall perform a Community Impact Assessment including relocations and Environmental Justice analysis (in accordance with Executive Order 12898) and Limited English Proficiency analysis (in accordance with Executive Order 13166).

a. Compile analysis to meet requirements of TA 6640.8A. Analysis must conform to applicable current State and FHWA guidance.
b. Process for Community Impact Assessment should follow guidance provided in TxDOT's Community Impacts Assessment Toolkit.
c. Identify and evaluate the social and economic impacts of a Transportation Activity.
d. Use appropriate data sources, such as the United States Census, windshield surveys, maps, public involvement, Multiple Listing Service, and aerial photographs to determine the potential for social impacts. Potential social impacts to be documented include:
   1) Demographics (population, ethnic or racial distribution, income) based on the most recent census or projections. Census data needs to be presented at the lowest scale available, which for race and ethnicity is the block level. Census data should be compared to the next higher level of aggregation (i.e. block to block group) instead of to the city or the county as a whole. Income data and language data are not available at the block level, and so for these issues, block groups should be compared to census tracts. The document should present data for each block and block group in the study area. Data should be presented in tabular format, including percentages to make data more useable for comparison purposes.
   2) Estimate the numbers, types of occupancy (owner and tenant) and sizes (number of employees) of businesses and farms to be displaced and describe each. Discuss impacts to the community if businesses are unable to relocate within their current service area. Identify sites available in the area

to which the affected business may relocate, the likelihood of such relocations, and potential impact on individual businesses and farms caused by displacement or by proximity of the proposed highway if not displaced.

3) Other populations (disabled, elderly).
4) Land uses in the project area (community services, schools, and others). Provide acreage estimates for each identified land use within the proposed ROW. Discuss current development trends in the area and the local government plans and policies on land use and growth in the area which will be impacted by the proposed project. Discuss, if proposed, Transportation Activity conforms to plans and policies.
5) Mobility (pedestrian, bicycle, transit, cars, rail).
6) Safety (traffic and potential for crime).
7) Identify other potential impacts identified in studies of social impacts.
8) Identify the property owners and tenants adjacent to a roadway project.
9) Identify all potential displacements.
10) Identify tenure of properties to be displaced (whether owned or rented).
11) Identify potential replacement housing or other replacement sites using Multiple Listing Service for current market data. If Multiple Listing Service is not available, similar source shall be used, provide the rationale for selecting this source is provided in the document. Compare value of property to be displaced with price of available properties of similar size (number of bedrooms) in the area. Comparison between displaced housing and available housing should be provided by tenure. If the preferred alternative has been identified, identification of replacement housing shall be performed only for the preferred alternative. If existing housing inventory is insufficient, does not meet relocation standards, or is not within the financial capabilities of the displaced, a commitment to last resort housing should be included in the document.
12) Identify changes in neighborhood and community cohesion for the various social groups identified.
13) Identify impacts on school districts, recreational areas, places of worship, businesses, police and fire protection, and other community services.
14) Identify the racial, ethnic and income level of affected individuals and communities, in order to determine any disproportionate impacts on any minority or low-income individuals or communities.
15) Use public contact and public involvement to gather information from individuals and communities regarding social impacts of Transportation Activities. This includes fulfilling the requirements of Executive Order 13166 (Improving Access to Services for Persons with Limited English Proficiency).
16) Identify possible mitigation measures to avoid or minimize any adverse impacts to the community or specific populations within the project area.
17) Identify and review subdivision plats, current land uses and anticipated land uses by windshield surveys or other type of surveys.
18) Evaluate travel modes and patterns in a study area, in order to determine any impacts a Transportation Activity may have on access to homes, businesses and community services. Use NCTCOG predictive models, observation, and public contact to determine travel modes and patterns. Identify potential changes in travel patterns due to Transportation Activities.
19) Identify whether the project involves a pricing component. If a pricing component is involved, the document shall follow current State environmental guidance for toll projects.

120.6 Environmental Justice

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:

a. Perform an environmental justice analysis. Studies shall fulfill the requirements of Executive Order 12898. Document shall provide a definition of Environmental Justice and describe the Executive Order.

b. Identify Environmental Justice communities within the study area.

c. Determine if the project would have disproportionately high and adverse impacts on

Environmental Justice communities. All impacts identified in the Community Impact Assessment and other relevant studies (i.e. noise analysis) should be considered to determine if the impacts disproportionately affect environmental justice communities.

d. Identify possible mitigation measures to avoid or minimize any adverse impacts to the environmental justice population within the project area.

e.

120.7 Limited English Proficiency

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:

a. Demonstrate compliance in environmental documents with Executive Order 13166. Compliance is generally dependent on public involvement activities.

b. Provide a definition of Limited English Proficiency and describe the Executive Order in the document.

c. Identify populations with Limited English Proficiency and the language(s) spoken. Document must list specific commitments to provide access to Limited English Proficiency individuals.

120.8 Historic Resource Identification, Evaluation and Documentation Services

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall perform non-archeological historic-age resource studies related to compliance with Section 106 and Section 110 of the National Historic Preservation Act (NHPA) (36 CFR 800). Such studies include, but are not limited to non-archeological historic-age resource surveys, research and documentation efforts leading to historic context statements, nominations to the National Register of Historic Places (NRHP), Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) documents, and other mitigation activities such as creating, managing or updating inventories of historic-age properties. Identification, evaluation and documentation tasks shall be completed in accordance with the provisions of the Archeology and Preservation: Secretary of the Interior's Standards

and Guidelines (48 FR Parts 44716 et seq. and requirements used by those of the National Park Service, and previously published in 36 CFR Part 61 (SOI Standards)).

The deliverables shall summarize the methods used for the historic resources studies, and shall summarize the results achieved. Each historic resources study shall have a deliverable. The summary of results shall be sufficiently detailed to provide satisfactory basis for thorough review by the State, FHWA, State Historic Preservation Office (SHPO), Texas Historical Commission (THC), local governments, and consulting parties. All deliverables shall be in sufficient detail to meet regulatory requirements for legal sufficiency. All deliverables shall be written to be understood by the public and must be in accordance with current Environmental Compliance Toolkit guidance published by the State's Environmental Affairs Division and in effect as of the date of receipt of the documents or documentation to be reviewed and Attachment C to this contract.

In accordance with the State's NEPA MOU, on the cover page of each biological evaluation or assessment, historic properties or cultural resources report, section 4(f) evaluation, or other analyses prepared under the authority granted by the MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader or include in a CE project record:

"The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23

U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."

Historic resource studies shall be performed and documented at sufficient levels to satisfy THC requirements for determining the presence of and documenting historically significant properties in the project Area of Potential Effects (APE) in accordance with 36 CFR 60 and 43 TAC, Part I, Chapter 2 and current Environmental Compliance Toolkit guidance published by the State's Environmental Affairs Division and in effect as of the date of receipt of the documents or documentation to be reviewed. All reports shall comply with policy, documentation standards, formats and templates provided by the State's Environmental Affairs Division in effect as of the date of the receipt of the documents. Performance of non-archeological historic-age resource studies shall include the following tasks as specified in a work authorization. Deliverables shall be transmitted to the State in electronic and paper formats and meet the requirements set for in the State's Environmental Compliance Toolkits.

120.9 Historic Resources Survey Reports (constraints analysis, reconnaissance, and intensive level as required by the State's Environmental Affairs Division)

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

All reports shall comply with policy, documentation standards, formats and templates provided by the State's Environmental Affairs Division in effect as of the date of the receipt of the documents.

Reconnaissance Survey for Non-Archeological Historic-Age Resources

a. The Engineer shall revise the survey report to address comments by the State and THC at no additional cost to the State and may be required to integrate the findings into another environmental document. The Engineer shall submit a hard copy and an electronic format copy of the survey report to the State. The State assumes responsibility for transmitting the survey report to THC and for transmitting THC comments to the Technical Expert.

b. The Engineer shall conduct tasks associated with public involvement as requested during the historic resources reporting phase and conforming to the methodology outlined in the ENV-approved historical studies public involvement plan (created upon request by the State).

   The Engineer shall contact interested parties when applicable in order to determine local knowledge historic resources in the project area. Interested parties include but are not limited to: CLG, HPO, CHC, HBF, and other consulting parties.

120.10 Intensive Survey for Historic Resources

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

Intensive Survey of Non-Archeological Historic-age Resources is not anticipated.

120.11 Archeological Background Studies

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. The Background Study shall be produced by a professional archeologist as defined in 13 TAC §26.4(2).

b. The Archeological Background Study shall conform to the current Review Standard for Archeological Background Studies, available from the State.

c. The Archeological Background Study shall consider all alternatives selected for detailed study, including all existing ROW, all proposed new ROW, easements (temporary and

permanent), and any other project-specific location designated by the State. The Archeological Background study shall consider the likely depth of impacts resulting from the proposed project.

d. To conduct the Archeological Background Study, the professional archeologist shall undertake a review of existing data, including, but not limited to, the Texas Archeological Sites Atlas, geologic maps, soil maps, aerial photographs, and historic maps. Based on this review, the Archeological Background Study shall identify and plot on a map the areas that require field investigation to evaluate the project's effects on archeological resources and cemeteries and shall identify the areas in which the proposed project would have no effect on archeological resources and cemeteries. The Archeological Background Study shall identify any areas proposed for field investigation where impacts are deep, extending beyond three feet in depth.

120.12 Archeological Surveys

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. An archeological background study shall be performed prior to initiating an archeological survey. If the Technical Expert has already performed an archeological background study or has been provided with an archeological background study by the State, a new study will not be required.

b. The archeological survey shall be produced by a professional archeologist as defined in 13 TAC §26.4(2).

c. Archeological survey shall only be performed for the preferred alternative unless survey of other alternatives is explicitly authorized by the State. The archeological survey shall include physical inspection of all areas identified for survey in the archeological background study unless the State explicitly requires survey of different areas.

d. Prior to initiating fieldwork, the Technical Expert shall obtain a Texas Antiquities Permit. The Technical Expert shall prepare a draft Texas Antiquities Permit application. The Texas Antiquities Permit application shall conform to the current Review Standard for Antiquities Permit Applications, available from the State. All draft Texas Antiquities Permit applications shall be submitted to the State for review and approval. The State will transmit approved Texas Antiquities Permit applications to the Texas Historical Commission for review and assignation of a permit number.

e. The conduct of an Archeological Survey (Reconnaissance or Intensive) shall conform to the current Review Standard for Archeological Survey Reports, available from the State. The draft and final report shall also fulfill the reporting requirements for the Texas Antiquities Permit.

120.13 Air Quality Studies

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall prepare the air quality section in accord with the current version of the State's Air Quality Handbook, and Air Quality toolkit. If the Air Quality Handbook requires it, the document must contain the following air quality elements in the format prescribed in the Air Quality toolkit:

a. Provide the following information for attainment counties in the environmental document:
   1) A statement indicating that the county or counties where the project is located is in attainment or unclassifiable for all National Ambient Air Quality Standards and that the conformity rules do not apply.
b. For projects in nonattainment or maintenance areas of the State that are not grouped or otherwise exempt from conformity in accordance with 40 CFR 93.126, prepare a conformity report form for coordination with

the ENV air quality specialist and ultimately FHWA in order to obtain a project level conformity determination.

c. Provide the following information for nonattainment or maintenance counties in the environmental document:
   1) A statement indicating whether or not the project has been included in, and is consistent with, the current conforming MTP. If it is not consistent with the MTP, contact the State for further instructions. Either bridging language will need to be used or the project will need to be revised.
d. Perform a project level congestion management process (CMP) analysis in accordance with current NCTCOG guidance. The analysis requires completion of the Project Implementation Form, and, if warranted, the Roadway Corridor Deficiency Form and Corridor Analysis Fact Sheet. Include a summary of the findings and recommendations in the environmental document.
e. Perform a carbon monoxide (CO) Traffic Air Quality Analysis (TAQA) if projected traffic volumes exceed 140,000 VPD. Include documentation of the methods and specifications used in modeling and the results of the modeling in the environmental document. This information should include traffic volumes, computer model(s) used, current and future year carbon monoxide concentrations, and percentages of the National Ambient Air Quality Standards for current and future year.
f. Prepare a quantitative Mobile Source Air Toxics (MSAT) analysis in accordance with the template language provided.
g. Perform a MSAT analysis and provide documentation in accordance with the current version of the State's Air Quality Handbook, Air Quality toolkit, and the 2012 memorandum from FHWA regarding Interim Guidance Updates on Air Toxic Analysis in NEPA Documents if projected traffic volumes exceed 140,000 Vehicle Per Day (VPD). The following are required for a quantitative MSAT analysis:
   1) A conference call with the State's District, Environmental Affairs Division (ENV) air quality specialist, MPO with jurisdiction, and the Engineer's Technical Expert.
   2) The Engineer shall take meeting minutes which will include the specifics for performing the quantitative MSAT analysis.
   3) The analysis will be performed as agreed upon in the conference call.
h. A qualitative statement of potential air quality construction emissions.
i. Respond to public comments received on air quality issues.

120.14 Traffic Noise Studies

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:

a. Perform a traffic noise analysis in accordance with the current version (April 2011) of the State's (FHWA approved) "Guidelines for Analysis and Abatement of Roadway Traffic Noise." Noise analyses shall be performed for all alternatives.
b. The State will provide a copy of the current version of the guidelines. Upon request, the State shall provide the Engineer with existing and predicted (future) traffic data and, when available, aerial photography.
c. By project location site visit, identify adjacent, land use development and photo document representative receivers that might be impacted by highway traffic noise and may benefit from feasible and reasonable noise abatement.
d. Determine existing and predicted noise levels for representative receivers, as follows:
   1) For transportation activities on new location, take field measurements of existing noise levels. Field measurements shall be accomplished with sound meters that meet or exceed American National Standards Institute (ANSI) S1.4-1983, Type 2.
   2) For transportation activities not on new location, perform computer modeling of existing noise levels and predicted (future) noise levels.
   3) Computer modeling shall be accomplished with the latest FHWA approved Traffic Noise Model (TNM) software program which must be purchased at the Engineer's expense from the software distributor.

e. Identify impacted receivers in accordance with the absolute and relative impact criteria.
f. Consider and evaluate all required noise abatement measures for impacted receivers in accordance with the feasible and reasonable criteria.
g. Propose noise abatement measures that are both feasible and reasonable.
h. Determine predicted (future) noise impact contours for transportation activities where there is adjacent undeveloped property where residential or commercial development is likely to occur in the near future.
i. Conduct up to two (2) Noise Workshops.

120.15 Water Quality Studies

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:
a. Address all water quality studies in accordance with Section 303(d) of the Clean Water Act as administered by the Texas Commission on Environmental Quality (TCEQ).
b. Identify if the project is located within five miles upstream of an impaired assessment unit and within the watershed of the impaired assessment unit.
c. c. Identify whether the project drains to any impaired assessment unit.
d. Provide the location of the project within the watershed of the impaired assessment unit.
e. Identify the impaired assessment unit number, segment name, and segment number.
f. Identify the pollutant(s) in the discharge for which the water body is listed, and the year of the 303(d) list used in the assessment
g. If the impaired assessment unit has a Total Maximum Daily Load that has been approved by the Environmental Protection Agency, provide:
    - the name and date of the Total Maximum Daily Load,
    - the name and date of any corresponding Implementation Plan, and
    - a discussion of whether the project is consistent with the approved Total Maximum Daily Load and Implementation Plan.
h. If unit does not have a Total Maximum Daily Load that has been the impaired assessment approved by the Environmental Protection Agency, indicate:
    - that the impaired assessment unit does not have a Total Maximum Daily Load that has been approved by the Environmental Protection Agency, and
    - if the project could discharge the pollutant identified in (d) above. If yes, discuss measures that will be taken to prevent or reduce the likelihood of such a discharge.

j. Discuss the Best Management Practices that will be used-particularly at the discharge point to the water body to meet other water quality regulations, such as vegetative swales, silt fencing, compliance with the Texas Pollutant Discharge Elimination System (TPDES).

120.16 Determining Impacts to Waters of the United States, including Wetlands

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. The Engineer shall identify all waters within the ROW and easements of the project area.
b. The Engineer shall make a preliminary determination of USACE jurisdiction (assume up to two (2) Nationwide Permits with Preconstruction Notifications)..
c. The Engineer shall delineate waters of the United States, including wetlands.
    1) Provide documentation which shall include all field work and compilation of field documentation for wetland delineations. Wetland delineations shall be performed in accordance with the current USACE Wetlands Delineation Manual (Technical Report Y-87-1) and, if appropriate, the Great Plains, Arid West, or Atlantic and Gulf Coastal Plain Supplement to Technical Report Y-87-1.
    2) Stake wetland boundaries in the field.
    3) Map the boundaries of the waters of the United States with the global positioning system
d. When required, the State will provide a land survey of wetland boundaries.
e. When the environmental service is to apply for a permit, the permit and supporting documentation shall be

the report and deliverable.

f. Draft and Final Deliverable.
   1) The Engineer shall produce a draft and final report of wetland determinations and delineations. The draft report will be submitted to the State for review and approval by the State and USACE. In the final report, address State and USACE comments from the draft report. The revised final report shall be delivered to the State within 30 days of receipt of comments from the State or USACE.
   2) The location of all sites, cities, villages, highways, rivers and other features or place names discussed in the text and situated in the project locale shall be shown on the appropriate figure. All tables, figures and maps shall have a number, title, appropriate explanatory note and a source reference. In addition, where applicable, figures and all maps shall display a title, north arrow, scale, legend and source reference.
   3) The report shall describe the delineation of the location of the boundaries of waters of the U.S., including wetlands, and project area in a format that satisfies USACE Fort Worth District Regulatory Program Procedure for Jurisdictional Determinations (March 2003). The following format shall be followed except when it conflicts with local USACE requirements :
      a) Cover Sheet
         In accordance with the State's NEPA MOU, on the cover page of each biological evaluation or assessment, historic properties or cultural resources report, section 4(f) evaluation, or other analyses prepared under the authority granted by the MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader or include in a CE project record:
         "The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."
      b) Introduction
         i. Who authorized the wetland delineation.
         ii. Why the wetland delineation is being done.
         iii. Location of site (USGS 7.5' Map).
         iv. Date of field visit(s).
         v. Identification of delineators.
      c) Methods
         i. Brief description of the method used.
         ii. State any modification of the method.
         iii. Source of existing information.
      d) Results and Discussion
         i. Description of the site.
         ii. Topography of the site.
         iii. Plant communities of the site.
         iv. Soil types identified on the site.
         v. Hydrology information of the site.
         vi. Existing wetland mapping (e.g., NWI, state, and local).
      e) Findings
         i. Types of wetlands identified on the site (e.g., Cowardin, et al. 1979).
            - Description of wetlands identified.
            - Locations of wetlands.
            - Area of wetlands (in acres).
            - Contrast with non-wetland.
            - How was the wetland boundary chosen (e.g., feature on landscape).
         ii. Types of other waters of the United States identified on the site.
            - Description of the other waters of the United States.
            - Locations of the other waters of the United States.
            - Area of the other waters of the United States.
            - Contrast with non-wetlands.

- How was the other water of the United States boundary chosen (e.g., feature on landscape).

f) Conclusion.
   i. Table summary of total area and types of wetlands and other regulated waters.
   ii. A map showing each location where a Wetland Data Form was completed.
   iii. Statement regarding the need for permits.
   iv. Caution that final authority rest with the appropriate agencies.
g) Literature Cited.
h) Appendix (Routine Wetland Determination Data Forms and, if required, Atypical Situation Data Forms).

120.17 Floodplain Impacts

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall determine whether the Transportation Activity has the potential to affect floodplains. The Engineer shall address Trinity River Corridor Regulatory Zone requirements.

Studies for floodplain impacts shall fulfill the requirements of Executive Order 11988 and 23 CFR 650, Subpart A.

a. Briefly describe the watershed characteristics of the study area in terms of land uses and changes in land use that may affect stream discharge.
b. Briefly describe the streams in the study area, including evidence of stream migration, down cutting, or aggradations.
c. Identify the presence and nature (e.g., zone A, zone AE, zone AE with floodway) of any FEMA mapped floodplains. Include the panel number.
d. Indicate the existence of any significant development associated with the mapped area and identify the jurisdiction responsible for the floodplain.
e. Identify the locations where an alternative will encroach on the base (100-year) floodplain ("encroachments"), where an alternative will support incompatible floodplain development and the potential impacts of encroachments and floodplain development. This identification should be included in the text and on a map.
f. Include a list of all jurisdictions having control over floodplains for each alternative.
g. Where an encroachment or support of incompatible floodplain development results in impacts, the report shall provide more detailed information on the location, impacts and appropriate mitigation measures. In addition, if any alternative (I) results in a floodplain encroachment or supports incompatible floodplain development having significant impacts, or (2) requires a commitment to a particular structure size or type, the report shall include an evaluation and discussion of practicable alternatives to the structure or to the significant encroachment. The report shall include exhibits which display the alternatives, the base floodplains and, where applicable, the regulatory floodplains.
h. For each alternative encroaching on a designated or regulatory floodplain, the report shall provide a preliminary indication of whether the encroachment would be consistent with or require a revision to the regulatory floodplain. If the preferred alternative encroaches on a regulatory floodplain, the report shall discuss the consistency of the action with the regulatory floodplain. In addition, the report shall document coordination with FEMA and local or state agencies with jurisdiction indicating that revision would be acceptable or that a revision is not required.
i. If the preferred alternative includes a floodplain encroachment having significant impacts, the report shall include a finding that it is the only practicable alternative as required by 23 CFR 650, Subpart A. The finding shall refer to Executive Order 11988 and 23 CFR 650, Subpart A. In such cases the report shall document compliance with the Executive Order 11988 requirements and shall be supported by the following information:
   1) The reasons why the proposed action must be located in the floodplain;
   2) The alternatives considered and why they were not practicable; and
   3) A statement indicating whether the action conforms to applicable state or local floodplain protection standards.

120.18 Stormwater Permits (Section 402 of the Clean Water Act)

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:

a. Describe the need to use the TPDES General Permit, TX 150000. The text will describe how the project will comply with the terms of the TPDES, including the Stormwater Pollution Prevention Plan.

b. Describe the need for Municipal Separate Storm Sewer System (MS4) notification. List MS4 participating municipalities.

120.19 USACE Permits

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. Section 10 of the Rivers and Harbors Act (33 USC 403). The Engineer shall determine whether the Transportation Activity requires a Section 10 permit and upon approval by the State, prepare and submit permit applications to USACE and obtain the permits.

b. Section 404 of the Clean Water Act (33 USC 1344). The Engineer shall determine whether the Transportation Activity requires a Section 404 permit (Nationwide Permit) and upon approval by the State, prepare and submit up to two (2) permit applications (Pre-Construction Notification (PCN) applications) to USACE and obtain the permits. PCNs will be prepared in accordance with current USACE policies and regulations. Individual Permitting is not anticipated.

c. If the permit is an Individual Section 404 permit, upon approval by the State, prepare and submit a Tier 1 checklist or a Tier II 401 certification questionnaire and water quality certification documentation to TCEQ and USACE.

d. The Engineer shall provide the State with documentation (including all original correspondence) of consultation with USACE and TCEQ.

e. The Engineer shall keep the State informed during the permit coordination process..

120.20 Water Body Modifications and Wildlife Impacts

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall identify water body modifications and impacts to wildlife. Studies shall fulfill the requirements of FHWA Technical Advisory T 6640.8A (1987) and Texas Administrative Code (TAC), Title 43, Part 1, Chapter 2.

120.21 Fish and Wildlife Coordination Act (FWCA)

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the

Proposed Project section of the EA.)

The Engineer shall identify water body modifications and impacts to wildlife. The Fish and Wildlife Coordination Act (FWCA) applies to projects that would result in the control or modification of a natural stream or body of water and would require a Section 404 Individual Permit. An Individual Permit is not anticipated.

120.22 Threatened or Endangered Species

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall perform biological services.

a. Surveys for Protected Species or Habitat of Protected Species based on the most current State. and TPWD Memorandum of Understanding With Natural Resources Agencies and Memorandum of Agreement
Between State and TPWD for Finalization of 2013 MOU.
The Engineer shall:

1) Perform surveys of protected species or habitat of protected species. This shall include:
   a) All species listed by the United States Fish and Wildlife Service (USFWS) as threatened or endangered or proposed for listing as threatened or endangered (50 CFR 17.11-12),
   b) All species that are candidates for review for listing by USFWS as threatened or endangered (per most recently updated list in Federal Register),
   c) Species listed as threatened or endangered species or species of greatest conservation need (SGCN) by the State of Texas Threatened and Endangered Species Listings, Texas Park and Wildlife Department (TPWD),
   d) Species protected by the Migratory Bird Treaty Act (50 CFR 10.13) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).
2) Examine existing data to determine the likelihood that rare species, protected species, their habitat, or designated critical habitat (per 50 CFR §17.94-95) could be impacted by the Transportation Activity. Existing data shall include the Element Occurrence Identification (EOID) records of the TPWD Natural Diversity Database, following the Guidelines set forth in the most current version of TPWD's Guidelines for TXNDD Data Analysis in TxDOT Environmental Documents.
3) An effect determination pursuant to the Endangered Species Act (ESA) must be included for all federally listed species. The determination of effect and impact (for state species) must be supported by evidence, and may require a detailed assessment.
4) Coordinate between the State and USFWS or TPWD as directed by the State to ensure proper rules, regulations and policies are followed for biological services. All agency coordination with USFWS or TPWD will be done by/though State.
   a) Habitat Analysis and Characterization of Project Study Area. A new memorandum of understanding (MOU) between TxDOT and Texas Parks and Wildlife Department (TPWD) went in effect on September 1, 2013. All projects, except maintenance projects for which a programmatic environmental review is conducted, are required to be evaluated under this MOU and Programmatic Agreements. As part of this evaluation, a TxDOT ENV Biological Evaluation Form would be prepared to determine if coordination would be necessary with TPWD. Although early coordination with TPWD will be initiated, it is anticipated that a Tier II site Assessment or Biological Resources Tech Report would be prepared to according to the Programmatic Agreement under the MOU and a Biological Evaluation would be prepared.

120.23 Invasive Species

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall address Executive Order 13112 on Invasive Species as per the Ecological Resources Handbook (TxDOT Environmental Compliance Toolkit).

120.24 Essential Fish Habitat

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. There is no Essential Fish Habitat located within the study area or that shall be affected by the Transportation Activity.

120.25 Beneficial Landscaping

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the

Proposed Project section of the EA.)

Address Executive Memorandum on Beneficial Landscaping of April 26, 1994 as per the Ecological Resources Handbook (TxDOT Environmental Online Toolkit).

120.26 Farmland Impacts

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

Determine farmland impacts. Identification of farmland impacts shall be in accord with the Farmland Protection Policy Act (FPPA) (7 USC 4201 et. seq.) and the Ecological Resources Handbook (TxDOT Environmental Online Toolkit) guidance on addressing FPPA, which includes determining whether the project is exempt or completion of form AD 1006 or CPA 106 as appropriate.

120.27 Initial Assessment of Hazardous Materials Impacts

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall:

a. Perform a hazardous material Initial Site Assessment (ISA) for potential hazardous materials impacts. The ISA shall determine the potential for encountering hazardous materials in the study area, including possible environmental liability, increased handling requirements (e.g. soil or groundwater), and potential construction worker health and safety issues.
b. The performance of the hazardous materials ISA will be sufficient to satisfy the State's current Environmental Compliance Toolkit for Hazardous Materials Initial Site Assessments, available from the State.
c. Determine the appropriate project-specific level of inquiry for the ISA. Consider preliminary project design and ROW and easement requirements, including project excavation requirements, anticipated ROW and easement acquisition, and the demolition or modification of structures.
d. Produce and submit to the State a completed ISA using the State's ISA Environmental Compliance Toolkit guidance format.
e. The Engineer's completed ISA shall include, when applicable, full copies of list search reports, including maps depicting locations, copies of agency file information, photographs, recommendations, and any other supporting information gathered by the Engineer to complete the ISA.
f. Based on the ISA information, the Engineer shall provide the State a report discussing the known or potential hazardous materials impacts suitable for inclusion in the environmental document. The report of hazardous materials impacts shall include, when applicable:

1) A concise summary of relevant information gathered during the ISA, including sufficient information to show that the study area for the Transportation Activity was adequately investigated for known or potential hazardous material contamination.
2) A concise description of the scope of the hazardous materials ISA, disclosure of any limitations of the assessment, and a statement indicating who performed the assessment.
3) A concise summary of the findings of the assessment for each alternative considered, along with an opinion of the potential of an identified site to impact the project during construction.
4) A discussion of any commitments recommended for performing further investigation of suspect areas, and justification for postponement of further investigation.
5) A summary of efforts to be employed by the State to avoid or minimize involvement with known or suspected hazardous material contamination sites during construction, and justification for not avoiding contaminated sites within the preferred alternative or corridor alignment.

6) Disclosure of known or suspected hazardous material contamination that is anticipated to be encountered during construction.
7) A discussion of any required or recommended special considerations, contingencies or provisions to handle known or suspected hazardous material contamination during ROW negotiation and acquisition,
property management, design and construction.
8) A summary of any early coordination or consultation conducted with the regulatory agencies, local entities or property owners.
9) A discussion of any further hazardous materials related coordination with, and approvals or permits
required from, the regulatory agencies or other entities.

g. Should the findings of the ISA conclude that additional investigation, special considerations, or other commitments from the State are required during future stages of project development, the Engineer shall review those findings and commitments with the State prior to completing the hazardous materials discussion for the environmental document.

120.28 Regional Toll Analysis

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

See Federal Highway Administration (FHWA) and Texas Department of Transportation (TxDOT) Joint Guidance for Project and Network Level Environmental Justice, Regional Network Land Use, and Air Quality Analyses for Toll Roads April 23, 2009.

120.29 Public Involvement (23 CFR 771.111)

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall implement a public involvement plan (to include team roles/responsibilities, stakeholder and key issues identification, goals and objectives, tools and techniques and timeline) to support the EA and Schematic. Develop a public involvement plan using the Texas Transportation Commission Public Involvement Policy:

http://ftp.dot.state.tx.us/pub/txdot-info/adm/2011/documents/minute_orders/jan27/9.pdf

Services will include coordination to identify and evaluate the study alternatives, select the preferred alternative and revise the schematic.

The Engineer shall:

a. Perform public involvement activities in accordance with TAC, Title 43, Part 1, Chapter 2 and 36 CFR 800.2.

b. Develop a public involvement plan that shall specify all activities to be performed and alternatives to be discussed during public involvement activities. Public involvement activities must be carried out in compliance with EO 13166 and EO 12898. The plan shall also discuss outreach strategies for both the general public and targeted strategies for Environmental Justice and Limited English Proficiency populations.

c. Compile, maintain and update a mailing list of people, agencies and organizations interested in the Transportation Activity. Please note that there are approximately 1,000 parcels adjacent to the proposed project limits. There are approximately 200-300 overflow parcels. These, combined with agencies and organizations, a mailing list of 1,500 recipients (per meeting/hearing) are anticipated.

d. Make all arrangements and pay for meetings with affected property owners (MAPOs), public meetings and hearings, including the site of the meetings, mailing and publishing notices, preparation of exhibits, provision for taping or transcription of proceedings, and any other arrangements as directed by the State. The Engineer shall not hold public meetings

or hearings in the absence of State personnel.

e. Submit all legal notices to the State for review no less than two weeks prior to publication.

f. Arrange meetings with the State to review all previous Engineer-prepared exhibits and other materials to be used prior to the two public meetings and one public hearing.

g. Obtain the State's approval for all legal notices, exhibits, and other materials.

h. Provide personnel to staff two public meetings and one public hearing, including people to perform registration, make presentations, and answer questions. Staffing levels of personnel to be provided shall be identified.

i. Develop and submit to the State a written summary of the public meetings in accordance with the Environmental Compliance Public Involvement Toolkit including when the meeting was conducted, where the meetings were held and who was in attendance. The summary shall also include the comments received and responses to comments, as well as modifications, if any, to the project resulting from comments received. Summary of public involvement shall be included in the environmental document.

j. Develop and submit to the State a comment and response report, summary and analysis, required certification, verbatim public hearing transcript and other information necessary to evaluate and disseminate information from public hearing. The comment and response report, summary and analysis, and other information shall be sufficiently detailed to provide a full administrative record of questions asked, issues and concerns raised, and responses given during the hearing. The comment and response report, summary and analysis, or other information shall be sufficiently detailed to provide a basis for incorporating all information gathered at the public hearing into the environmental document. The public hearing documentation submitted to the State shall include: Summary and Analysis; Comment and Response Report (including copies of all written comments received and response letters); verbatim transcript and certification signed by the District Engineer. All public hearing documentation will be done in accordance with the Environmental Compliance Public Involvement Toolkit

k. Develop and send acknowledgement letters and response letters to commenters at public meetings or hearings. The Engineer shall not distribute acknowledgement or response letters without prior approval by the State.

l. Develop, publish, and distribute a newsletter on the Transportation Activity, including compiling and maintaining a mailing list. The Engineer shall not distribute the newsletter without prior approval by the State.

m. Develop and maintain a web site to disseminate information on the Transportation Activity and to gather comments from the public. The web site shall be approved by the State prior to making it available to the public over the internet. All updates to the web site must be approved by the State prior to posting.

n. The Engineer shall create a project Logo or insignia with the goal of promoting project awareness and community outreach. This distinctive branding is considered an integral part of the project's outreach and community-based project synergy. Upon State review of up to 3 Engineer-created Logo prototypes, or versions thereof, the State shall select prototype features or options that the Engineer shall use to produce a final Logo that shall be incorporated into each project presentation, product and / or deliverable per State direction. Per State direction, a non-colorized version of the final Logo shall be utilized when appropriate on project products.

120.30 Section 4(f) Evaluations (assume one deminimis Section 4(f))

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

a. The 4(f) Section of the environmental document shall document all data necessary to address to the satisfaction of FHWA potential use of Section 4(f) properties in accordance with 23 CFR 774.
b. The Section 4(f) Evaluation shall comply with policy, documentation standards, formats and templates provided by the State's Environmental Affairs Division in effect as of the date of the receipt of the documents.
c. Report states the reason a Section 4(f) evaluation is being completed and references project listed in STIP, including date of STIP.
d. Report discusses the presence of any other Section 4(f) properties located in the project area.
e. All Section 4(f) evaluations shall meet the requirements set for in the State's Environmental Compliance Toolkit guidance.

120.31 Section 6(f) Evaluation

(This scope is for the corresponding section(s) as listed in the Environmental Impacts of the Proposed Project section of the EA.)

The Engineer shall determine if Land and Water Conservation Fund Act funds were used for the Section 4(f) property in accordance with the regulatory requirements and TPWD guidelines.

120.32 Reference Documents

The Engineer shall adhere to the content of the following reference documents in the development of the assigned documentation:

a. TxDOT On-Line Environmental Compliance Toolkit guidance

120.33 Technical Support

The Engineer shall respond to requests made by the State requesting technical assistance and support needed to continue to advance the development of the project. The Engineer shall support the State by preparing written materials and graphics, letters, conducting research, or other similar activities and submit to the State for review and approval prior to its use or distribution. The Engineer shall respond to up to 15 technical requests made by the State and provide up to two revisions to each deliverable that is created based on comments received from the State.

120.34 Coordination Meetings

The Engineer shall plan and conduct up to 10 additional meetings to maintain effective communication between the Engineer, State and other entities to achieve successful and expedient project completion. All meetings attended by Engineer shall be documented by a meeting summary of the same forwarded to the State's Project Manager, unless such summaries are provided by another party. The Engineer shall maintain an ongoing, functional catalogue of attendee names, dates, locations, telephone numbers, addresses/email addresses, and matters discussed. The Engineer shall provide up to two employees for each meeting. The following meetings are anticipated:

a. Regional, local, state and federal agencies (up to 4 meetings)
b. Property Owners (up to 2 meetings)
c. Utility Owners (up to 1 meetings)
d. DART/TRE/UPRR/NTTA (up to 2 meeting)
e. Civic Groups (up to 1 meetings)

120.35 Coordination Meeting Support

The Engineer shall provide additional support staff (up to 2) and equipment for up to 10 of the coordination meetings and prepare PowerPoint presentations or exhibit boards for up to 10 of

the coordination meetings.

FC 120 Deliverables:

The Engineer shall provide the following draft and final documents and associated electronic files:

- Project Scope
  - The State (District) would be the sponsor and State (ENV) would be the delegate, therefore, the Project Scope would be prepared in ECOS utilizing tasks, reports, and studies indicated by the risk assessment and a schedule. Acceptance of the Project Scope would also be the confirmation of the environmental classification. The project scope shall be used early in the project development process to provide an outline for a collaborative agreement between the State regarding the specific requirements and expectations for the project.

- Right of Entry
  - Update Microsoft® Excel file of property owners.
  - Prepare and mail property owners any necessary right-of-entry (ROE) notice letters (up to 1000 requests).
- Draft EA and Technical Reports to District, NCTCOG, ENV, (no Hard Copies) and electronic versions in PDF and Microsoft word format
  - The Engineer shall prepare an EA document and shall assist the State in following the document through approval by the appropriate agencies. The document and format shall consist of:
    1) Cover and Cover Sheet
    2) Table of Contents
    3) Purpose and Need, including Purpose and Need Technical Report
    4) Alternatives
    5) Environmental Impacts of the Proposed Action and Alternatives
    6) Environmental Impacts of the Proposed project
    7) Indirect Impacts Analysis
    8) Cumulative Impacts Analysis
    9) Mitigation and Commitments
    10) Agency Coordination
    11) Conclusion
    12) References
    13) List of Abbreviations
    14) Appendices
    15) Section 4(f) *Deminimis*
  - The Engineer shall also:
    1) Submit the environmental review checklist, Draft EA, technical reports, and EA/technical report comment-response matrices to the State for review and comment.
    2) Revise Draft EA and technical reports per comments from State (up to 3 times).
    3) Revise Draft EA per comments from ENV (up to 3 times).
- Final EA and Technical Reports to District, NCTCOG, ENV, (up to 25 Hard Copies)

- The Engineer shall prepare an EA document and shall assist the State in following the document through approval by the appropriate agencies. The document and format shall consist of:

  15) Cover and Cover Sheet

  16) Table of Contents

  17) Purpose and Need, including Purpose and Need Technical Report

  18) Alternatives

  19) Environmental Impacts of the Proposed Action and Alternatives

  20) Environmental Impacts of the Proposed project

  21) Indirect Impacts Analysis

  22) Cumulative Impacts Analysis

  23) Mitigation and Commitments

  24) Agency Coordination

  25) Conclusion

  26) References

  27) List of Abbreviations

  28) Appendices

- The Engineer shall also prepare Final EA and FONSI.

- Comment Response Forms (up to 1500 Hard Copies)
- Draft Non-Archeological Historic-Age Resource Reconnaissance Survey Report (Up to 5 copies)
- Final Non-Archeological Historic-Age Resource Reconnaissance Survey Report (Up to 20 copies)
- Documentation of coordination with ENV for Archeological Resources
- Noise Workshop Summary Binders (2 workshops, up to 10 copies each)
- Public Meetings and Hearing Materials including:
  - Prepare for and participate in two Public Meetings and one Public Hearing
  - Identify and pay for two public meetings and one public hearing venues, court reporters, and area media and newspaper publications
  - Prepare legal notice, legal notice publication schedule, coordinate with newspapers, and mail letters (per FC 120.30.c, up to 1,500 recipient letters are anticipated per meeting/hearing) and provide proof of publication for two public meetings and one public hearing
  - Prepare registration forms, comment forms, up to 10 exhibit boards and up to five handouts per meeting or hearing (up to 500 for each Meeting/Hearing)
  - Prepare a PowerPoint presentation that would run as a continuous loop during the public meetings
  - Attend a pre-meeting prior to each public meetings or hearing with the State to review meeting material
  - Public Hearing Speech
  - Up to 5 handouts, up to 500 copies of each (2,500 total) for each Meeting/Hearing
  - Exhibits (up to 10) for each Meeting/Hearing
  - Printed Materials

    - Prepare press releases to announce the public meetings and hearing
    - Develop and produce a one-page (8 ½ x 11 front and back) full color project fact sheet (up to 3 updates and 2,000 color copies)
  - Public Meetings Summary Report addressing up to 500 comments (Up to 20 hard copies)
  - Public Hearing Summary and Analysis Report addressing up to 500 comments (Up to 20 hard copies)
  - Address State and Division comments on the Public Meetings Summary Report and Public Hearing Summary and Analysis Report (up to 3 iterations)
  - Pre Meeting/Hearing materials including District's Public Involvement Checklist and Venue/Room Layout for each Meeting/Hearing

- Up to 3 press releases (PDF format)
- Project Fact Sheet
- EPIC Sheet
- APD StageGate Checklist
- Various Technical Reports including:
  - Community Impacts/Socioeconomic and Project Level Toll Analysis
  - Water Quality
  - Wetlands
  - Section 404 NWP with PCN
  - Section 4(f) de minimis
  - Traffic Noise
  - Hazardous Materials
  - Biological Resources
  - Air Quality and MSAT
  - Prepare a Technical Memo on Air Quality Conformity for project corridor to include potential implementation phasing
  - Indirect Impacts Analysis
  - Cumulative Impacts Analysis
  - Historic and Archeology
  - Visual and Aesthetic Impacts
- Mailing List –The Engineer shall develop, update and maintain the Project Mailing List for abutting property owners and stakeholders (includes local, state and federal officials, agencies and other interested parties as identified (up to 4 updates). See previous notes. There are approximately 600 adjacent properties, some overflow, local, state and federal officials, agencies and other interested parties. Anticipating 1,500 mail listings.
- Up to 50 letters, graphics, or similar documents. Drafts shall be electronic and up to 20 hard copies shall be distributed once finalized.
- Newsletters – The Engineer shall produce up to six editions of a project newsletter. The newsletter shall be 11" x 17" double sided, folded, color. Up to 1500 hard copies per edition and a PDF version shall be produced. Hard copies shall be mailed to adjacent property owners.
- Meeting Agendas, Sign-in Sheets, Summaries (up to 53)

- PowerPoint Presentation and exhibit boards for up to 10 meetings
- Project Website – The Engineer shall develop project content and provide up to six updates for the Project Website (http://www.dot.state.tx.us/ftw/mis/ih820/Project.htm) managed by the State.

FC 130 – Right-of-Way Data and Utility Location

The Engineer shall perform ROW surveying and mapping for the proposed project limits on IH 820 from IH 20 to Meadowbrook Drive, IH 20 from Forest Hill Drive to East of Kelly Elliott Road and US 287 from south of Bishop Street to Sublett Road in Tarrant County in accordance with the General Requirements.

General Standards for Surveying

All surveys shall meet or exceed the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices promulgated by the Texas Board of Professional Land Surveying (TBPLS), and the Texas Department of Transportation (TxDOT) TxDOT Survey Manual, latest edition, and shall be accomplished in an organized and professional manner, subject to the approval of the State.

The State's *ROW Vol. 1 - Procedures Preliminary to Release*, (online at: http://onlinemanuals.txdot.gov/txdotmanuals/ppr/index.htm) and the TxDOT Survey Manual, latest edition, will serve as a guide and shall be the basis for the format and preparation of all ROW documents produced, including ROW (ROW) maps, property descriptions (including parcel plats), and other ROW work products, unless otherwise specified by the State.

The North American Datum of 1983 (NAD83), Texas Coordinate System of 1983 (State Plane Coordinates), applicable to the zone or zones in which the work is performed, with values in U.S. Survey Feet, shall be used as the basis for all horizontal coordinates derived, unless otherwise directed by the State. The datum adjustment currently in use by the State shall be utilized unless otherwise specified by the State.

Project or surface coordinates shall be calculated by applying a Combined Adjustment Factor (CAF) to State Plane Coordinate values. The value utilized for a project may be directed by the State to: a) match existing or ongoing projects, b) conform to a county-wide surface adjustment factor, or c) be calculated specifically for the project area.

Elevations shall be based on the North American Vertical Datum 88 (NAVD88), unless otherwise specified by the State.

All Global Positioning System (GPS) work, whether primary control surveys or other, shall meet or exceed the current Federal Geodetic Control Subcommittee's (FGCS) Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques and the TxDOT Survey Manual, latest edition, to the order of accuracy specified in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.

All conventional horizontal and vertical control surveys shall meet or exceed the current FGCS Standards and Specifications for Geodetic Control Networks, the TxDOT Survey Manual, latest edition, and the Texas Society of Professional Surveyors (TSPS) Manual of Practice for Land Surveying in the State of Texas, latest edition, to the order of accuracy specified, and in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.

In order to ensure accuracy and accountability of the services provided under this contract, the Engineer's Surveyor may be required to certify work performed under this contract as true and correct according to FGCS standards, the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying

in the State of Texas, as may be applicable.

The Engineer's Surveyor shall provide temporary signing and traffic control in and around survey operations; signing and traffic control shall comply with provisions of the Texas Manual of Uniform Traffic Control Devices (TMUTCD). All signs, flags and safety equipment shall be provided by the Engineer's Surveyor. As specified, the Public Information Office in the District Headquarters shall be notified 5 working days in advance of any lane closures.

The Engineer's Surveyor shall provide all personnel, equipment, and materials necessary for the performance of the activities required by this agreement or by any work authorization.

Survey Data (original and processed) shall be provided to the State on a compact disk or other approved medium and shall be fully compatible with the State's computer system and with programs in use by the State at the time of the submission, without further modification or conversion. The current program formats used by the State are: *Microsoft® Office Word 2010* for word processing, *MicroStation® V8i* and *GEOPAK Survey* for graphics applications and ArcGIS for its Geo-Database platform. Data collection programs must be compatible with the current import formats allowed by *GEOPAK Survey* and be attributed with current Feature Codes. These programs may be replaced at the discretion of the State.

Variations from these software applications or other requirements listed above shall only be allowed if requested in writing by the Engineer's Surveyor and approved by the State.

The Engineer's Surveyor shall perform QA/QC on all procedures, field surveys, data, and products prior to delivery to the State. The State may also require the Engineer's Surveyor to review the survey work performed by other Surveyors. If, at any time, during the course of reviewing a submittal of any item it becomes apparent to the State that the submittal contains errors, omissions, and inconsistencies, the State may cease its review and return the submittal to the Engineer's Surveyor immediately for appropriate action by the Engineer's Surveyor. A submittal returned to the Engineer's Surveyor for this reason is not a submittal for purposes of the submission schedule.

The Standards for services that are not boundary-related but that relate to surveying for engineering projects may be determined by the construction specifications, design specifications, or as specified by the State.

Specific Work To Be Performed

The Engineer's Surveyor shall perform surveying services for projects and locations as directed by the State per the function codes and description of work provided below.

130.1 Ownership Data

a. The Engineer shall prepare a digital database (MS Excel document) of the property owners along the project limits listed below:

   i. IH 820 from IH 20 to Meadowbrook Drive, IH 20 from Forest Hill Drive to East of Kelly Elliott Road, and US 287 from south of Bishop Street to Sublett Road (approximately 600 parcels)

b. The database shall include the parcel number (corresponding to a conglomeration of Tarrant Appraisal District maps), owners name, address, recording information including Volume/Page to owners' deeds, and Tarrant Appraisal District tract account number. The ownership data shall be updated by the Engineer before the public meetings and public hearing is held.

c. It shall be the Engineers responsibility to Prepare Right-of-Entry letters for property owners along the project limits and obtain permission to survey on parcels of land that require additional survey information to be gathered.

d. Deliverables

   i. Updated property owner list in MS Excel computer format for use in developing the

mailing list, one (1) hard copy, and on CD (1 hard copy and 1 disk of property owner list for each public meeting and public hearing.)

ii. Provide PDF Copy of deeds, plats, and Tarrant Appraisal District tract accounts for adjacent property owners for the project limits.

130.2 Field Survey

The Engineer shall provide staking and locating of existing right of way within the project limits which includes IH 820 from IH 20 to Meadowbrook Drive, IH 20 from Forest Hill Drive to East of Kelly Elliott Road, and US 287 from south of Bishop Street to Sublett Road. Include on the schematic location of new driveways from the previous schematic. The Engineer's Surveyor shall recover existing project controls. Provide additional field surveys to define the locations of new driveways and subsequent any new buildings structures or signs within 400 feet of the existing ROW. The State will be responsible for providing any additional survey of controls or benchmarks along the project limits.

a. Deliverables

The Engineer shall provide the State a 2D MicroStation file of the existing ROW.

Updated planimetric and DTM files in electronic format.

130.3 Prepare Proposed ROW Taking Lines

a. The Engineer shall provide the State's Fort Worth District Microstation DGN files indicating the preliminary proposed ROW taking lines along the project limits listed below:

i. IH 820 from IH 20 to Meadowbrook Drive, IH 20 from Forest Hill Drive to East of Kelly Elliott Road, and US 287 from south of Bishop Street to Sublett Road. (approximately 600 parcels)

b. Deliverables

The Engineer shall provide the State a 2D MircroStation file of the proposed ROW taking lines along the project limits.

130.4 Utilities Engineer Investigations

The Engineer shall collect and review utility data previously mapped and determine what additional data is needed for mapping of existing utilities. Perform Quality Levels D, C, and some A (up to 10 spot locations) utility engineer investigations within the proposed ROW limits, and prepare Existing Utility Facility Plan sheets in accordance with the General Requirements and as follows:

Utility Engineering Investigation (currently Subsurface Utility Engineering) including utility investigations subsurface and above ground prepared in accordance with AASHTO standards [American Society Of Civil Engineers (ASCE) C-1 38-02 (http://www.fhwa.dot.gov/programadmin/asce.cfm)] and Utility Quality Levels as follows.

130.4.1 Utility Quality Levels are defined in cumulative order (least to greatest) as follows:

- Quality Level D - Existing Records: Utilities are plotted from review of available existing records.
- Quality Level C - Surface Visible Feature Survey: Quality level "D" information from existing records is correlated with surveyed surface-visible features. Includes Quality Level D information. If there are variances in the designated work area of Level D, a new schematic or plan layout will be necessary to identify the limits of the proposed project and the limits of the work area required for the work authorization; including highway stations, limits within existing or proposed ROW, additional areas outside the proposed ROW, and distances or areas to be included along existing intersecting roadways.

- Quality Level B - Designate: Two-dimensional horizontal mapping. This information is obtained through the application and interpretation of appropriate non-destructive surface geophysical methods. Utility indications are referenced to established survey control. Incorporates quality levels C and D information to produce Quality Level B. If there are variances in the designated work area of Level D, a new schematic or plan layout will be necessary to identify the limits of the proposed project and the limits of the work area required for the work authorization; including highway stations, limits within existing or proposed right of way, additional areas outside the proposed right of way, and distances or areas to be included along existing intersecting roadways.
- Quality Level A - Locate (Test Hole): Three-dimensional mapping and other characterization data. This information is obtained through exposing utility facilities through test holes and measuring and recording (to appropriate survey control) utility/environment data. Incorporates quality levels B, C and D information to produce Quality Level A.

The Engineer shall:

- Comply with all applicable State policy and procedural manuals.

Subsurface Utility Locate (Test Hole) Service (Quality Level A), Assume 10 spots for Level A SUE. Locate means to obtain precise horizontal and vertical position, material type, condition, size and other data that may be obtainable about the utility facility and its surrounding environment through exposure by non-destructive excavation techniques that ensures the integrity of the utility facility. Subsurface Utility Locate (Test Hole) Services (Quality Level A) are inclusive of Quality Levels B, C, and D.

The Engineer shall:

- Review requested test hole locations and advise the State in the development of an appropriate locate (test hole) work plan relative to the existing utility infrastructure and proposed highway design elements.
- Coordinate with utility owner inspectors as may be required by law or utility owner policy.
- Neatly cut and remove existing pavement material, such that the cut not to exceed 0.10 square meters (1.076 square feet) unless unusual circumstances exist.
- Measure and record the following data on an appropriately formatted test hole data sheet that has been sealed and dated by the Engineer:
- Elevation of top and bottom of utility tied to the datum of the furnished plan.
- Identify a minimum of two benchmarks utilized. Elevations shall be within an accuracy of 15mm (.591 inches) of utilized benchmarks.
- Elevation of existing grade over utility at test hole location.
- Horizontal location referenced to project coordinate datum.
- Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
- Utility facility material(s).
- Utility facility condition.
- Pavement thickness and type.
- Coating/Wrapping information and condition.
- Unusual circumstances or field conditions.
- Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, cathodic protection or other protective coverings and features. Water excavation can only be utilized with written approval from the appropriate State District Office.
- Be responsible for any damage to the utility during the locating process. In the event of damage, the Engineer shall stop work, notify the appropriate utility facility owner, the State and appropriate regulatory agencies. The regulatory agencies include, but are not limited to the Railroad Commission of Texas and the Texas Commission on Environmental Quality. The Engineer shall not resume work until the utility facility owner

has determined the corrective action to be taken. The Engineer shall be liable for all costs involved in the repair or replacement of the utility facility.

- Back fill all excavations with appropriate material, compact backfill by mechanical means, and restore pavement and surface material. The Engineer shall be responsible for the integrity of the backfill and surface restoration for a period of three years. Install a marker ribbon throughout the backfill.
- Furnish and install a permanent above ground marker (as specified by the State, directly above center line of the utility facility.
- Provide complete restoration of work site and landscape to equal or better condition than before excavation. If a work site and landscape is not appropriately restored, the Engineer shall return to correct the condition at no extra charge to the State.
- Plot utility location position information to scale and provide a comprehensive utility plan sign and sealed by the responsible Engineer. This information shall be provided in the latest version of Micro Station or Geopak format used by the State. The electronic file will be delivered on C.D or DVD. When requested by the State, the Locate information must be over laid on the State's design plans.
- Return plans, profiles, and test hole data sheets to the State. If requested, conduct a review of the findings with the State.
- Close-out permits as required.

FC 150 – Field Surveying and Photogrammetry

150.1 General Standards for Surveying

- All surveys shall meet or exceed the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices promulgated by the Texas Board of Professional Land Surveying (TBPLS), and the Texas Department of Transportation (TxDOT) State Survey Manual, latest edition, and shall be accomplished in an organized and professional manner, subject to the approval of the State.
- The State's ROW Vol. 1 - Procedures Preliminary to Release, (online at: http://onlinemanuals.txdot.gov/txdotmanuals/ppr/index.htm) and the State Survey Manual, latest edition, shall serve as a guide and shall be the basis for the format and preparation of all ROW documents produced, including ROW (ROW) maps, property descriptions (including parcel plats), and other ROW work products, unless otherwise specified by the State.
- The North American Datum of 1983 (NAD83), Texas Coordinate System of 1983 (State Plane Coordinates), applicable to the zone or zones in which the work is performed, with values in U.S. Survey Feet, shall be used as the basis for all horizontal coordinates derived, unless otherwise directed by the State. The datum adjustment currently in use by the State shall be utilized unless otherwise specified by the State.
- Project or surface coordinates shall be calculated by applying a Combined Adjustment Factor (CAF) to State Plane Coordinate values. The value utilized for a project may be directed by the State to: a) match existing or ongoing projects, b) conform to a county-wide surface adjustment factor, or c) be calculated specifically for the project area.
- Elevations shall be based on the North American Vertical Datum 88 (NAVD88), unless otherwise specified by the State.
- All GPS work, whether primary control surveys or other, shall meet or exceed the current Federal Geodetic Control Subcommittee's (FGCS) Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques and the State Survey Manual, latest edition, to the order of accuracy specified in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.

- All conventional horizontal and vertical control surveys shall meet or exceed the current FGCS Standards and Specifications for Geodetic Control Networks, the State Survey Manual, latest edition, and the Texas Society of Professional Surveyors (TSPS) Manual of Practice for Land Surveying in the State of Texas, latest edition, to the order of accuracy specified, and in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.
- In order to ensure accuracy and accountability of the services provided under this contract, the Engineer's Surveyor may be required to certify work performed under this contract as true and correct according to FGCS standards, the State Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.
- The Engineer's Surveyor shall provide temporary signing and traffic control in and around survey operations; signing and traffic control shall comply with provisions of the TMUTCD. All signs, flags and safety equipment shall be provided by the Engineer's Surveyor. As specified, the Public Information Office in the District Headquarters shall be notified 24 hours in advance of any lane closures.
- The Engineer's Surveyor shall provide all personnel, equipment, and materials necessary for the performance of the activities required by this agreement or by any work authorization.
- Survey Data (original and processed) shall be provided to the State on a compact disk or other approved medium and shall be fully compatible with the State's computer system and with programs in use by the State at the time of the submission, without further modification or conversion. The current program formats used by the State are: Microsoft® Office Word 2010 for word processing, MicroStation® V8 and GEOPAK Survey for graphics applications. Data collection programs must be compatible with the current import formats allowed by GEOPAK Survey and be attributed with current Feature Codes. These programs may be replaced at the discretion of the State.
- Variations from these software applications or other requirements listed above shall only be allowed if requested in writing by the Engineer's Surveyor and approved by the State.
- The Engineer's Surveyor shall perform QC/QA on all procedures, field surveys, data, and products prior to delivery to the State. If, at any time, during the course of reviewing a submittal of any item it becomes apparent to the State that the submittal contains errors, omissions, and inconsistencies, the State may cease its review and return the submittal to the Engineer's Surveyor immediately for appropriate action by the Engineer's Surveyor. A submittal returned to the Engineer's Surveyor for this reason is not a submittal for purposes of the submission schedule.
- The Standards for services that are not boundary-related but that relate to surveying for engineering projects may be determined by the construction specifications, design specifications, or as specified by the State.
- Survey shall supplement existing topographic survey to include all new driveways and any buildings that would be impacted.

The deliverables to be specified in individual work authorizations for design surveys may be any combination of the following:

i. Maps, plans, or sketches prepared by the Engineer's Surveyor showing the results of field surveys. Prepare a final design/topographic drawing in digital format showing all features located in the field, an ASCII file of all coordinates located in the field and a hard copy of the coordinates.
ii. Computer printouts or other tabulations summarizing the results of field surveys.
iii. Digital files or media acceptable by the State containing field survey data.

iv. Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.
v. Field survey notes, as electronic and hard copies.
vi. An 8 ½ inch by 11 inch survey control data sheet for each construction control point which shall include, but need not be limited to, a location sketch, a physical description of the point including a minimum of two reference ties, surface coordinates, a surface adjustment factor, elevation, and the horizontal and vertical datums used.
vii. Survey control data sheets shall be signed and sealed by the supervising Registered Professional Land Surveyor.
viii. A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, data including property descriptions with field notes and plats, right-of-way maps, and survey control data sheets.
ix. Survey reports in a format requested by the State.

150.2 Aerial Photogrammetry

The state will provide NCTCOG 2-foot contour digital orthographic quads on CD ROM for the Project corridors and the IH30 Interchange DTM and topographical mapping electronic. This information will be used to update the base mapping for the Project corridor. Additional aerial photogrammetry is not anticipated.

150.3 Review of Data

The Engineer shall review the data collected and from this information and update the files accordingly

Integrate additional data into the study file and evaluate tasks for supporting documentation.

Develop additional field data, if needed, following review and discussion with the Project Manager. For the purposes of defining scope and level of study effort, these new field studies at this time are limited to:

- Updating the sidewalk inventory of the corridor indicating location and condition of sidewalks (estimated at 200 miles of vehicle travel).
- Windshield surveys to verify land use not available from aerial photogrammetry, to make appropriate corrections or additions. Estimated at 200 miles of vehicle travel.
- Identifying any new driveways and buildings or structures along the corridor.

150.4 Technical Documentation

- Updated documentation will be prepared to record updated field inventories and reviews, including summaries of data developed from field studies. This documentation will also contain an index or catalog of data base items collected or designated for study and will be included in the revised EA and IAJR documents.

Deliverables

- Technical documentation (3 copies).
- PDF Copy

FC 161 – Drainage

161.1 Cross Road Drainage Structures

The Engineer shall perform preliminary hydraulic design and incorporate into the schematic design the preliminary cross road drainage structures for the project limits. The Engineer shall provide a drainage report in a format provided by the State.

161.1.1 Data Collection. Acquire the latest HEC-1, HEC-2, HEC-HMS and HEC-RAS models for Culvert or Bridge locations. Collect from the State the as-built or record plans of the existing drainage structures and perform a site reconnaissance of each existing drainage structure.

Hydraulic Report

161.1.1.1 Prepare approved Hydrologic Study and approved Hydraulic Analysis Report. The report shall provide a separate tabbed section for each drainage structure analyzed. Each tab shall include the following:

- General Description of Existing Structure.
- Hydrologic Analysis summarizing drainage area determination, method of calculation (SCS or Rational), runoff coefficients (CN or C), timing parameters (Lag or TC), design storm frequency, existing hydrology versus proposed (effects of development, if any), and photos of existing structures.
- Hydraulic Design Analysis summarizing programs used (HEC-RAS, Geopak Drainage, Culvert Master, HY-8), boundary conditions (tailwater determination), overtopping elevation, existing structure analysis, proposed structure analysis, comparison of existing to proposed, velocity controls as needed, channel improvements as needed and drainage easements as needed.
- Summary showing existing, proposed, criteria and FEMA floodplain impact.
- Preliminary Culvert or Bridge Layout.
- Appendix consisting of the drainage area map, time of concentration calculations, runoff coefficient determination, output data, hydraulic data sheet (for HEC-RAS models showing cross section locations), water surface profiles (for HEC-RAS models), as-built plans and calculations, and other exhibits as appropriate for miscellaneous channel improvements, etc.

161.1.1.2 Assemble, reproduce and submit up to six draft copies of the report with computer models on CD in 3-ring binders for review and comment by the State.

161.1.1.3 Revise the report as needed and assemble, reproduce and submit up to six copies of the final report with final computer models on CD in 3-ring binders to the State.

161.1.2 Hydrologic Studies – Discharges

161.1.2.1 Prepare Drainage Area Maps and determine drainage areas.

161.1.2.2 Perform the following for each drainage structure:

- Determine soils and land use boundaries and composite values.
- Determine runoff coefficient (CN or C).
- Determine timing parameter (Lag or TC and intensity) (Assume no upstream detention).
- Model creation and output for existing and proposed.

161.1.3 Hydraulic Drainage Design

161.1.3.1 Perform the following for all non-bridge class culvert models within project corridor:

- Determine tailwater conditions (from outfall geometry or adjacent water body).
- Determine overtopping boundary conditions (from as-builts or proposed plans).
- Perform existing culvert analysis from as-builts.
- Perform proposed culvert analysis.
- Perform velocity analysis and channel modifications analysis.

161.1.3.2 The Engineer shall perform the following for all bridge class culverts and bridge structures within project corridor:

- Determine tailwater conditions (from outfall geometry or adjacent water body).
- Determine overtopping boundary conditions (from as-builts or proposed plans).
- Perform duplicate effective (conversion from HEC-2 to HEC-RAS).
- Perform corrected effective (additional surveyed sections and copied cross sections, corrections to match latest 2-ft topo and surveyed sections, ineffective flow areas, etc.).
- Perform proposed condition model (add bridge and culvert Info. - may require additional cross-sections, channel improvements, etc.).
- Perform velocity analysis and channel modifications analysis.

Summary of Function Code 161 Deliverables:

In conjunction with the performance of the foregoing services, the Engineer shall provide the following draft and final documents and associated electronic files:

- Preliminary Hydraulic Data Sheets
- Drainage quantity tabulations for large cross structures
- Two (2) hard copies of the Draft Drainage Report in 3-ring binders and electronic versions in both MS Word and PDF format, along with all input and output files used to develop the drainage report.
- Two (2) hard copies of the Final Drainage Report in 3-ring binders and electronic versions in both MS Word and PDF format, along with all input and output files used to develop the drainage report.

FC 163 – Miscellaneous Roadway

163.1 Traffic Control Plan (TCP)

The Engineer shall develop a colorized preliminary TCP and narrative in roll plot format to facilitate constructability reviews. Assume up to four iterations or submittals shall be made. Assume TCP phases shall be developed for the project corridor.

163.2 Quality Control/Assurance Reviews

Quality Control (QC) shall be performed in accordance with the Quality Management Plan (see FC 164). QC reviews shall be performed on subconsultant deliverables prior to submittal to the State.

Independent QC reviews for roadway, drainage, bridge and retaining walls are inclusive to their respective tasks. The Project Quality Manager shall perform a Quality Assurance (QA) audit prior to the submittal of deliverables to the State to confirm all QC processes have been performed.

163.3 Agreements

The Engineer shall assist the State in developing preliminary terms/conditions and exhibits for potential future agreements between the State and potential key agencies/entities. The Engineer shall develop the Exhibit "A" for railroad agreements for all roadway bridge structures over railroads and railroad bridge structures over roadways. The Engineer shall use the Rail Division checklist found in the Railroad Manual in developing the Exhibit "A". It is estimated there shall be six (6) Exhibit "A". Exhibits shall be developed in accordance with the State's Bridge Detailing Manual and Rail Division Railroad Manual. The Engineer shall begin coordination with the State, Rail Division, and Railroad owners within three months after the contract execution.

Summary of Function Code 163 Deliverables:

In conjunction with the performance of the foregoing services, the Engineer shall provide the following draft and final documents and associated electronic files:

- TCP roll plots
- Corridor Inventory and Analysis Plan - to include identified opportunities and constraints (one color plan or roll plot)
- Photo Inventory Plan (one color plan)
- Preliminary agreement terms/conditions related exhibits
- 6 Preliminary UPRR (to be verified) Exhibit A and Form 2299.
- Quality Control and Audit Documentation (upon request)

FC 164 – Project Management

164.1 Financial Plan

The Engineer, in coordination with the State Project Manager (hereinafter referred to as Project Manager), shall be responsible for directing and coordinating activities associated with the update to IH 820 Schematic/EA/IAJR. The updated IAJR and EA documents along with the revised schematic will be performed in accordance with the scope of services provided herein.

Because the total cost for the Project is estimated to be greater than $500 million, FHWA Financial Plan Guidance requires the preparation of a FHWA Project Management Plan (PMP) and Financial Plan (FP) and Annual Updates (AUs) to the FP. A FHWA cost estimate review (CER) workshop will be required.

The Engineer shall prepare an FP in accordance with FHWA Financial Plans Guidance (December 18, 2014 www.fhwa.dot.gov/ipd/pdfs/project_delivery/financial_plans_guidance.pdf) for review by the State (District and Division). The purpose of the PMP and FP is to document the project cost estimate and revenue structure and provide reasonable assurance that sufficient financial resources shall be available to implement and complete the project as planned. The FP shall cover topics such as the project cost estimate, revenue structure, funding resources, project implementation over time based on the available financial resources, and the cost and revenue assumptions used in development.

164.1.1 At a minimum, the Initial Financial Plan Should include the information outlined in the following nine sections:

- Project Description.
- Schedule.

- Project Cost.
- Project Funds.
- Financing Issues.
- Cash Flow.
- Public-Private Partnership (P3) Assessment.
- Risk and Response Strategies.
- Annual Update Cycle.

164.1.2 The Engineer shall provide one FP AU reflecting changes in project finances and funding resources. The update shall include revisions to the nine sections mentioned above as well as discussions of significant cost or revenue changes, comparisons to previous plan estimates, and explanations of mitigating actions taken to adjust for deviations. Additional FP AUs would require a supplemental agreement.

164.1.3 The Engineer shall submit the FP and FP AU to the State for review and comment. For scoping purposes, it is assumed that the initial drafts of the FP and FP AU shall be reviewed concurrently by the District and the State's Design and Finance Divisions. The Engineer shall address the State's comments and prepare revised drafts. The Engineer shall develop comment response forms that include comments, comment numbers, page and line numbers of draft where comments originated, page and line numbers where revisions can be located, and responses.

164.1.4 The Project Management Plan will be updated to identify project organization and responsibilities, coordination and communication procedures, project team meetings, document format, report format, technical memorandum format, graphic production standards, and other important operational information pertaining to the Engineer/State team activities.

164.2 Progress Reports and Invoices

The Engineer shall review the project schedule and prepare a monthly progress report, together with evidence of the work accomplished during the time period (36 months) including a Gantt chart indicating the percentage of completion of each task shown on Exhibit "C". The Engineer shall meet with the Project Manager to report on progress. After each meeting with the State, the Engineer shall submit a meeting minutes summarizing the events and action items of the meeting. Invoices for the work completed during the period will be submitted monthly via email for the State. The invoice shall include a matrix of labor categories and hours incurred by firm for the specified services period. Monthly progress reports will include:

A. Activities during the reporting period;

B. Activities planned for the following month;

C. Problems encountered and actions to remedy them;

D. Overall status, including a tabulation of percentage complete by task, management schedule showing progress, supporting documentation and

E. Minutes of project meetings.

164.3 Coordination and Administration

The development and maintenance of effective communication among the Engineer's design team, the State and other entities will be one of the key factors in achieving the successful completion of the Schematic/EA/IAJR. The Engineer shall oversee the preparation of the Schematic/EA/IAJR documents and manage the Schematic/EA/IAJR activities as follows:

164.3.1 Schematic/EA/IAJR Coordination. The correspondence and coordination will be handled

through and with the concurrence of the Project Manager.

164.3.2 Lines of Communication. Communications between the Engineer and the State will be through the Project Manager unless otherwise directed in writing by the Project Manager.

The Engineer shall designate one Texas Registered Professional Engineer to be the Schematic/EA/IAJR Manager and be responsible throughout the Schematic/EA/IAJR for project management and the communications, including billing, with the Project Manager. Any replacements to the Engineer's designated Schematic/EA/IAJR Manager must be approved by the State.

164.3.3 Schematic/EA/IAJR Administration. The Engineer shall manage the Schematic/EA/IAJR activities, including scheduled and unscheduled meetings, direction of design team and staff, correspondence with and response to the State which would include assistance to the State in the preparation of responses to inquiries.

164.3.4 Coordination Meetings. Up to ten (10) meetings will be held with the regional, local, State and Federal agencies; property owners with significant issues which may be affected by the project; utility owners; railroad companies; other consulting firms; etc., as needed or required by the State. Before meetings, the Engineer shall discuss the agenda for the meetings with the Project Manager, or designee, to confirm that released information is appropriate and correct. Data collected during the Schematic/EA/IAJR will not be released to any agency or to the public without prior approval of the Project Manager. The Engineer shall document all coordination meetings and forward copies of meeting minutes to the Project Manager. Engineer shall conduct monthly conference calls with the Engineer's sub-consultants.

164.3.5 Correspondence. The Engineer shall submit all written materials, letters, survey forms, etc. used to solicit information or collect data for the Schematic/EA/IAJR to the Project Manager, or designee, for review and acceptance before its use or distribution. Copies of the outgoing correspondence and incoming correspondence will be provided to the Project Manager, or designee, on a continuing basis, preferably biweekly. Correspondence and reports will bear the Schematic/EA/IAJR title, state and federal project numbers as appropriate. Word processing will be prepared using Microsoft Word.

164.3.6 Communication with other agencies. Communications with other agencies regarding this Schematic/EA/IAJR will be handled adhering to the State branding templates, with TxDOT logo information, return address, Project Manager or designee's signature, and their approval.

164.3.7 Release of Information. The release of any Schematic/EA/IAJR related information will be approved by the Project Manager.

164.3.8 Document Printing and Distribution. The Engineer shall be responsible for printing copies of draft and final documents, reports, newsletters, etc. produced for the Schematic/EA/IAJR. Whenever possible, copies should be double-sided. The Engineer shall be responsible for the distribution of draft and final documents to appropriate agencies and the public.

164.3.9 Project Close-out. Upon Schematic/EA/IAJR completion, the Engineer shall submit original Schematic/EA/IAJR files to the State. Copies of the transmitted materials will be retained by the Engineer for two (2) years after delivery of originals to the State.

164.4 Quality Management Plan

The Engineer shall establish a project specific Quality Management Plan to provide quality control and quality assurance processes for each deliverable submitted to the State. The quality control process shall specify detailed review, checking, back checking and documentation procedures to be performed for every plan, calculation and report and document prepared for submittal. The quality assurance process shall provide verification and documentation that the quality control processes were adequately performed through the incorporation of reviews, checklists, audits and corrective measures.

164.5 Control and Scheduling

164.5.1 The Engineer shall prepare a Gantt chart and detailed Primavera project schedule indicating tasks and subtasks, critical dates, milestones, deliverables, and State review requirements. This schedule shall depict the order and interdependence of various tasks, milestones and deliverables as identified herein. This schedule shall be used to identify the critical path items, and facilitate monitoring and control of the job progress. The schedule shall be used to communicate progress, and also provide early warning of potential delays or disruptions to the workflow activity relationships. Progress shall be reviewed monthly and should reviews indicate a substantial change in progress, the Engineer shall recommend a revised schedule for State review and approval. The schedules will be updated every three (3) months.

Engineer shall also prepare a less detailed, colorized graphic timeline with major project milestones identified. This schedule shall be dimensioned such that it is readily reproducible, and understandable to the lay public.

164.5.2 The Engineer shall conduct production management meetings (assumed monthly) to keep the project activities on schedule and to identify actions to be taken or issues that need resolution to keep the project on schedule. Any issues that need resolution or action items shall be identified in the Progress Report.

164.6 Subconsultant Management

Coordination and review of subconsultants: The Engineer shall prepare subcontracts for subconsultant(s). The Engineer shall conduct a review of all deliverables provided by subconsultants. The Engineer shall monitor activities of the subconsultant, review progress reports and invoices which are incorporated into the monthly invoice to the State.

Summary of Function Code 164 Deliverables:

The Engineer shall provide the following draft and final documents and associated electronic files:

- Controlled copy of the PMP (3 copies [Printed and electronic (CD)] per submittal, 3 submittals; 2 draft, 1 final)
- FP (3 copies per submittal, 3 submittals; 2 draft, 1 final)
- FP AU (3 copies per submittal, 3 submittals; 2 draft, 1 final)
- FP Comment Response Forms (3 copies per submittal)
- Monthly progress reports (assume 36 months) (via email)
- Monthly invoice and billings. (via email)
- Monthly update of progress report from Subconsultant. (via email combined into progress report)
- Monthly Subconsultant Invoice. (via email)
- Meeting Agendas, Sign-in Sheets, Minutes of each meeting. (1 Printed and electronic copy)
- Quality Management Plan
- Quarterly update of progress reflected on the Gantt chart developed in Microsoft Excel format.
- Quarterly update of progress reflected on Primavera project schedule.
- All Incoming correspondence. (1 Printed and electronic copy)
- All Outgoing correspondence. (1 Printed and electronic copy)
- Original Schematic/EA/IAJR Files (1 Printed and electronic copy)

- PowerPoint presentation, meeting agendas, technical handouts, meeting minutes and Project Coordination folder (3-ring binder) for coordination meetings with local, state, and federal agencies and officials. The Engineer shall provide hard copies for these meetings and electronic versions in MS Word and PDF format.

ATTACHMENT D
WORK AUTHORIZATION
D-1
WORK AUTHORIZATION NO. ____
CONTRACT FOR ENGINEERING SERVICES

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of Article 5 of Engineering Contract No. _____ (the Contract) entered into by and between the State of Texas, acting by and through the Texas Department of Transportation (the State), and _____ (the Engineer).

PART I. The Engineer will perform engineering services generally described as _____ in accordance with the project description attached hereto and made a part of this Work Authorization. The responsibilities of the State and the Engineer as well as the work schedule are further detailed in exhibits A, B and C which are attached hereto and made a part of the Work Authorization.

PART II. The maximum amount payable under this Work Authorization is $_____ and the method of payment is _____ as set forth in Attachment E of the Contract. This amount is based upon fees set forth in Attachment E, Fee Schedule, of the Contract and the Engineer's estimated Work Authorization costs included in Exhibit D, Fee Schedule, which is attached and made a part of this Work Authorization.

PART III. Payment to the Engineer for the services established under this Work Authorization shall be made in accordance with Articles 3 thru 5 of the contract, and Attachment A, Article 1.

PART IV. This Work Authorization shall become effective on the date of final acceptance of the parties hereto and shall terminate on _____, unless extended by a supplemental Work Authorization as provided in Attachment A, Article 1.

PART V. This Work Authorization does not waive the parties' responsibilities and obligations provided under the Contract.

IN WITNESS WHEREOF, this Work Authorization is executed in duplicate counterparts and hereby accepted and acknowledged below.

THE ENGINEER	**THE STATE OF TEXAS**
_____ (Signature)	_____ (Signature)
_____ (Printed Name)	_____ (Printed Name)
_____ (Title)	_____ (Title)
_____ (Date)	_____ (Date)

LIST OF EXHIBITS

Exhibit A	Services to be provided by the State
Exhibit B	Services to be provided by the Engineer
Exhibit C	Work Schedule
Exhibit D	Fee Schedule/Budget
Exhibit H-2	Subprovider Monitoring System Commitment Agreement

ATTACHMENT D
D-2
SUPPLEMENTAL WORK AUTHORIZATION NO. ____
WORK AUTHORIZATION NO. ____
CONTRACT FOR ENGINEERING SERVICES

THIS SUPPLEMENTAL WORK AUTHORIZATION is made pursuant to the terms and conditions of Article 5 Contract No. _____ hereinafter identified as the "Contract," entered into by and between the State of Texas, acting by and through the Texas Department of Transportation (the State), and _____ (the Engineer).

The following terms and conditions of Work Authorization No. ____ are hereby amended as follows:

This Supplemental Work Authorization shall become effective on the date of final execution of the parties hereto. All other terms and conditions of Work Authorization No. ____ not hereby amended are to remain in full force and effect.

IN WITNESS WHEREOF, this Supplemental Work Authorization is executed in duplicate counterparts and hereby accepted and acknowledged below.

THE ENGINEER	**THE STATE OF TEXAS**
_____ (Signature)	_____ (Signature)
_____ (Printed Name)	_____ (Printed Name)
_____ (Title)	_____ (Title)
_____ (Date)	_____ (Date)

ATTACHMENT E

FEE SCHEDULE
(Final Cost Proposal)

This attachment provides the basis of payment and fee schedule. **The basis of payment for this contract is indicated by an "X" in the applicable box.** The basis shall be supported by the Final Cost Proposal (FCP) shown below. If more than one basis of payment is used, each one must be supported by a separate FCP.

"X"	Basis	
X	Lump Sum	The lump sum shall be equal to the maximum amount payable. The lump sum includes all direct and indirect costs and fixed fee. The Engineer shall be paid pro rata based on the percentage of work completed. For payment the Engineer is not required to provide evidence of actual hours worked, travel, overhead rates or other evidence of cost.
X	Unit Cost	The unit cost(s) for each type of unit and number of units are shown in the FCP. The unit cost includes all direct and indirect costs and fixed fee. The Engineer shall be paid based on the type and number of units fully completed and the respective unit cost. For payment, the Engineer is not required to provide evidence of actual hours worked, travel, overhead rates or any other cost data. The FCP may include special items, such as equipment which are not included in the unit costs. Documentation of these special costs may be required. The maximum amount payable equals the total of all units times their respective unit cost plus any special direct items shown.
X	Specified Rate Basis	The specified rates for each type of labor are shown in the FCP below. The FCP may include special items, such as equipment which are not included in the specified rates. Payment shall be based on the actual hours worked multiplied by the specified rate for each type of labor plus other agreed to special direct cost items. The specified rate includes direct labor and indirect cost and fixed fee. The State may request documentation of reimbursable direct costs including hours worked. Documentation of special item costs may be required. The specified rate is not subject to audit.
____	Cost Plus Fixed Fee	Payment shall be based on direct and indirect costs incurred <u>plus</u> a pro rata share of the fixed fee based on the ratio of <u>labor and overhead cost incurred</u> to <u>total estimated labor and overhead cost in the FCP</u> or the percentage of work completed. The invoice must itemize labor rates, hours worked, other direct costs and indirect costs. The Engineer may be required to provide documentation of hours worked and any eligible direct costs claimed. The provisional overhead rate charged is subject to audit and adjustment to actual rates incurred. The FCP below shows the hourly rates for labor, other direct expenses including but not limited to travel and allowable materials, provisional overhead rate and the fixed fee. __A. Actual Cost Plus Fixed Fee - Actual wages are paid (no minimum, no maximum. This option does not apply to Indefinite Deliverable Contracts.) __B. Range of Cost Plus Fixed Fee – Actual wages <u>must</u> be within the allowable range shown on the Final Cost Proposal.

ATTACHMENT E – FEE SCHEDULE

Final Cost Proposal (FCP) Supporting Basis of Payment

* The **MAXIMUM AMOUNT PAYABLE** is $5,510,974.80.

The maximum amount payable is based on the following data and calculations:

* The maximum amount payable must be based on the contract scope. The work authorization fee schedules will be derived from this attachment.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

PRIME PROVIDER NAME: CIVIL ASSOCIATES, INC.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Senior Project Manager	20+	$80.00	$231.81
Senior Engineer	15+	$65.00	$188.35
Project Engineer	10 to 15	$49.00	$141.98
Design Engineer	5 to 10	$41.00	$118.80
Engineer-In-Training	1 to 5	$28.00	$81.13
Senior Engineer Tech	15+	$39.00	$113.01
Engineer Tech	5 to 15	$30.00	$86.93
Junior Engineer Tech	1 to 5	$19.00	$55.05
Senior CADD Operator	15+	$35.00	$101.42
CADD Operator	5 to 15	$25.20	$73.02
Junior CADD Operator	1 to 5	$20.00	$57.95
Senior Environmental Planner	15+	$60.00	$173.86
Environmental Planner IV	10 to 15	$44.32	$128.42
Environmental Planner III	5 to 10	$35.00	$101.42
Environmental Planner I/II	1 to 5	$28.00	$81.13
Senior Environmental Scientist	15+	$55.00	$159.37
Environmental Scientist IV	10 to 15	$44.00	$127.50
Environmental Scientist III	5 to 10	$35.00	$101.42
Environmental Scientist I/II	1 to 5	$28.00	$81.13
Project Controller	5 to 15	$27.43	$79.48
Admin/Clerical		$21.00	$60.85
INDIRECT COST RATE:	**163.42%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

CONTRACT # 02-5SDP5014
ERP # 4460

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: CH2M Hill, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	20+	$70.00	$159.24
Quality Manager	10 to 20	$58.00	$131.94
Senior Engineer	15+	$55.00	$125.11
Project Engineer	10 to 15	$46.00	$104.64
Design Engineer	5 to 10	$41.00	$93.27
Engineer-In-Training	1 to 5	$32.00	$72.79
Senior Structural Engineer	15+	$65.00	$147.86
Structural Engineer	5 to 15	$53.00	$120.56
Admin/Clerical		$20.00	$45.50
INDIRECT COST RATE:	**106.80%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: HDR Engineering, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	20+	$70.00	$198.61
Senior Engineer	15+	$60.00	$170.23
Project Engineer	10 to 15	$49.00	$139.02
Design Engineer	5 to 10	$41.00	$116.33
Engineer-In-Training	1 to 5	$33.00	$93.63
Senior Engineer Tech	15+	$39.00	$110.65
Engineer Tech	5 to 15	$30.00	$85.12
Junior Engineer Tech	1 to 5	$19.00	$53.91
Admin/Clerical		$21.00	$59.58
INDIRECT COST RATE:	**157.93%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: Lina T. Ramey and Associates, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	20+	$70.00	$200.79
Senior Engineer	15+	$60.00	$172.11
Project Engineer	10 to 15	$49.00	$140.56
Design Engineer	5 to 10	$41.00	$117.61
Engineer-In-Training	5 to 10	$33.00	$94.66
Senior Engineer Tech	15+	$38.00	$109.00
Engineer Tech	5 to 15	$31.00	$88.92
Junior Engineer Tech	1 to 5	$25.00	$71.71
Senior CADD Operator	15+	$34.00	$97.53
CADD Operator	5 to 15	$28.00	$80.32
Junior CADD Operator	1 to 5	$26.00	$74.58
Admin/Clerical		$23.00	$65.97
INDIRECT COST RATE:	**160.77%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: Gorrondona & Associates, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	20+	$70.00	$196.18
Senior Engineer	15+	$60.00	$168.15
Project Engineer	10 to 15	$49.00	$137.33
Design Engineer	5 to 10	$41.00	$114.91
Engineer-In-Training	5 to 10	$33.00	$92.49
Senior Engineer Tech	15+	$38.00	$106.50
Engineer Tech	5 to 15	$31.00	$86.88
Junior Engineer Tech	1 to 5	$25.00	$70.06
Senior CADD Operator	15+	$34.00	$95.29
CADD Operator	5 to 15	$28.00	$78.47
Junior CADD Operator	1 to 5	$26.00	$72.87
Admin/Clerical		$23.00	$64.46
INDIRECT COST RATE:	**154.78%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: Halff Associates, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	20+	$85.00	$252.56
Senior Engineer	15+	$65.00	$193.14
Project Engineer	10 to 15	$46.00	$136.68
Design Engineer	5 to 10	$40.00	$118.85
Engineer-In-Training	1 to 5	$32.00	$95.08
Senior CADD Operator	15+	$30.50	$90.63
CADD Operator	5 to 15	$25.00	$74.28
Senior Geologist	15+	$42.00	$124.80
Environmental Scientist I/II	1 to 5	$28.00	$83.20
Senior Project Controller	15+	$40.00	$118.85
Project Controller	5 to 15	$26.00	$77.25
Senior Architectural Historian	15+	$42.00	$124.80
Admin/Clerical		$21.00	$62.40
Senior Visual Technologist		$46.00	$136.68
Junior Visual Technologist		$31.00	$92.11
Sr. GIS Specialist		$37.50	$111.42
Jr. GIS Specialist		$29.00	$86.17
Senior GIS Operator		$37.50	$111.42
GIS Operator		$29.00	$86.17
GIS Technician		$26.00	$77.25
INDIRECT COST RATE:	**170.12%**		
PROFIT RATE:	**10.0%**		

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E - FEE SCHEDULE

SPECIFIED RATE AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: **AmaTerra Environmental, Inc.**

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE		HOURLY CONTRACT RATE
Project Manager	10 to 20		$149.79
Quality Manager	10 to 20		$145.92
Senior CADD Operator	15+		$80.15
CADD Operator	5 to 15		$61.28
Senior Environmental Specialist	15+		$120.21
Environmental Specialist	5 to 15		$81.70
Junior Environmental Specialist	1 to 5		$63.89
Senior Environmental Scientist	15+		$120.81
Environmental Scientist IV	10 to 15		$106.89
Environmental Scientist III	5 to 10		$90.85
Environmental Scientist I/II	1 to 5		$64.49
Senior Biologist	15+		$110.30
Biologist IV	10 to 15		$89.87
Biologist III	5 to 10		$80.12
Biologist I/II	1 to 5		$70.81
Senior Archeologist-Principal Investigator	15+		$118.28
Archeologist IV	10 to 15		$118.14
Archeologist III	5 to 10		$90.23
Archeologist I/II	1 to 5		$65.36
Senior Field Tech (Envrionmental, Biological, Archeological)	15+		$54.22
Field Tech (Envrionmental, Biological, Archeological)	5 to 15		$45.83
Senior Project Controller	15+		$82.82
Senior Historian	15+		$89.19
Historian IV	10 to 15		$80.34
Historian III	5 to 10		$90.12
Historian I/II	1 to 5		$79.06
Senior Architectural Historian	15+		$115.74
Architectural Historian	5 to 15		$89.84
Admin/Clerical			$49.02

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

UNIT COST PAYMENT BASIS

SUBPROVIDER NAME: Lina T. Ramey and Associates, Inc.

SERVICES TO BE PROVIDED		UNIT	COST
1 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$95.00
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$145.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$175.00
4 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$200.00
LiDAR Mobile Mapping System, (Includes Vehicle Operator, LiDAR Technician mileage on project and fuel) (Does not include travel to project.)		day	$8,000.00
Utility Services			
Mobilization/Demobilization		mile	$5.07
Level C and D. Includes labor and equipment for records research, CADD, and mapping.		LF	$0.50
Level B (Designation). Includes labor and equipment for records research, designating, engineering, surveying, and CADD.		LF	$1.30
Level A (Location, Test Holes). Includes labor and equipment for vacuum excavation, engineering, surveying, and CADD.			
Level A: 0 to 5 ft.		each	$1,050.00
Level A: > 5 to 8 ft.		each	$1,250.00
Level A: > 8 to 13 ft.		each	$1,500.00
Level A: > 13 to 20 ft.		each	$1,800.00
Level A: > 20 ft.		each	$2,250.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

UNIT COST PAYMENT BASIS

SUBPROVIDER NAME: **Gorrondona & Associates, Inc.**

SERVICES TO BE PROVIDED		UNIT	COST
1 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$95.00
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$140.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$170.00
4 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	$200.00
LiDAR Mobile Mapping System, (Includes Vehicle Operator, LiDAR Technician mileage on project and fuel) (Does not include travel to project.)		day	$8,000.00
Mobilization for Aerial Photography/LiDAR Fixed Wing Aircraft (Includes aircraft, Pilot, Camera/LiDAR Operator, fuel and transportation cost)		mission	$18,000.00
Aerial Photography Flight Crew Fixed Wing Aircraft (Includes Pilot and Camera Operator)		hour	$250.00
LiDAR Flight Crew Fixed Wing Aircraft (Includes Pilot and LiDAR Operator)		hour	$250.00
Mobilization for Helicopter Airborne LiDAR (Includes helicopter, Pilot, LiDAR Operator, fuel and transportation cost)		mile	$300.00
Helicopter Flight Crew Fixed Wing Aircraft (Includes Pilot and LiDAR Operator)		hour	$300.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Lodging/Hotel (Taxes/fees not included)	day/person		$21.60
Lodging/Hotel - Taxes and Fees	day/person		Current State Rate
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person		Current State Rate
Mileage	mile	Current State Rate	
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day		$50.00
SUV or ATV Rental (Includes taxes and fees; Insurance costs will not be reimbursed)	day		$125.00
Rental Car Fuel	gallon		$3.75
Rental Car Fuel	day		$25.00
Air Travel - In State - Short Notice (Coach)	Rd Trip/person		$450.00
Air Travel - In State - 2+ Wks Notice (Coach)	Rd Trip/person		Coach
Air Travel - Out of State - Short Notice (Coach)	Rd Trip/person		$600.00
Air Travel - Out of State - 2+ Wks Notice (Coach)	Rd Trip/person		$400.00
Oversize, special handling or extra baggage airline fees (with advance coordination with TxDOT)	each		Current Airline Rate
Taxi/Cab fare	each/person		$30.00
Parking	day		$20.00
Toll Charges	each		$2.00
Standard Postage	letter	Current Postal Rate	
Certified Letter Return Receipt	each	Current Postal Rate	
Overnight Mail - letter size	each		$25.00
Overnight Mail - oversized box	each		$30.00
Overnight Mail - large schematic rolls	each		$35.00
Courier Services	each		$40.00
Photocopies B/W (8 1/2" X 11")	each	$0.10	
Photocopies B/W (11" X 17")	each	$0.20	
Photocopies Color (8 1/2" X 11")	each	$0.65	
Photocopies Color (11" X 17")	each	$1.25	
Digital Ortho Plotting	sheet	$1.50	
Plots (B/W on Bond)	square foot	$0.50	
Plots (Color on Bond)	square foot	$1.00	
Plots (Color on Photographic Paper)	square foot	$4.00	
Color Graphics on Foam Board	square foot	$5.00	
Presentation Boards 30" X 40" Color Mounted	each		$75.00
Report Printing	each		$50.00
Report Binding and Tabbing	each	$5.00	
Drawing Binders (variable depth for 11" X 17" paper)	each		$8.00
Notebooks	each		$5.00
Reproduction of CD/DVD	each		$4.00
CDs	each	$1.50	
4" X 6" Digital Color Print	picture	$0.25	
Tx Parks & Wildlife Data Request Fees	each		$40.00
Hazardous Materials Database Search	per search		$500.00
Noise Meter Rental	per project		$75.00

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Environmental Database Search	mile (or per project)		$1,000.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)	day		$30.00
TARL Site Recording	site		$64.00
Curator (Drawer & TX Archaelogical Research Lab for artifacts & report)	per project		$750.00
Newspaper Advertisement	per publication		$9,000.00
Court Reporter	page		$8.00
Court Reporter (Public Meetings, Hearings & Transcription)	day		$500.00
Translator (English to Spanish, other language as appropriate, or Sign Language) for Public Involvement	event		$500.00
Translator (English to Spanish, other language as appropriate, or Sign Language)	hour		$100.00
Written Translation Services	word	$0.16	
Custodian for Public Involvement	hour/custodian		$30.00
Sound Technican for Public Involvement	event		$300.00
Public Involvement Facilty Rental	event		$1,000.00
Public Involvement Facilty Rental (estimate)	4 hours		$750.00
Public Involvement Facilty Rental (estimate)	8 hours		$3,000.00
Public Involvement Facilty Rental (estimate)	hour		$150.00
Audio - Visual Equipment Rental	event		$450.00
Audio - Equipment Rental	each		$300.00
Public Involvement Graphic Artist	event	$155.00	
Professional Narrator for Public Involvement	event	$150.00	
Professional Narrator for Public Involvement	hour	$100.00	
Property Record Fees (Courthouse and Courthouse Direct Record Fees)	Per Parcel		$25.00
Public Notices - Mass Mailing	each		$400.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope	each		$500.00
Electronic Message Signs	day		$200.00
Website set-up and maintenance	each		$350.00
Website URL Rental	year	$30.00	
FEMA FIS Backup Data Request	each		$150.00
FEMA FIS (Manual)	each		$5.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)	each		$5,000.00
FEMA Model/Floodplain Hardcopy	each		$250.00
FEMA Maps	each		$5.00
TARL Site Form Fee	per site		$23.00
Railroad - Flagger (Service provided by RR)	Hour		$60.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of $1 Million required by RR.)	each		$2,600.00
Railroad - Permit [Note: Read and then delete this note. Most railroad companies charge a fee of $500 for the permit to access their property.]	each		$600.00

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes classroom training and employee certification card.)	per person		$260.00
Required Permit Fees (non- railroad)	each		$75.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Small Project (Includes labor, equipment and fuel)	day		$1,500.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Medium Project (Includes labor, equipment and fuel)	day		$2,300.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Large Project (Includes labor, equipment and fuel)	day		$2,800.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)	day		$400.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)	day		$250.00
Flashing Arrow Board	day		$500.00
Portable Message Board	day		$200.00
Law Enforcement/Uniform Officer (including vehicle)	hour		$50.00
Boat with Motor	day		$350.00
Fathometer	day		$90.00
Backhoe Rental	day		$950.00
Maps, Tapes and supplies	each	$4.00	
Rental Equipment - Gasoline Powered Auger	day		$60.00
GPS Receiver (rates applied to actual time GPS units are in use)	hour	$25.00	
GPS RTK (rates applied to actual time GPS units are in use)	hour	$25.00	
GPS Static (rates applied to actual time GPS units are in use)	hour	$25.00	
Map Records	sheet		$2.00
Deed Copies	sheet	$1.00	
Certified Deed Copies	sheet	$2.50	
Historical Aerial Images	unit		$90.00
Aerial Photographs (1" = 500' scale)	each		$90.00
Type II ROW Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (Includes crew time, equipment, materials, rentals, & labor.) Brass Marker supplied by TxDOT.	each	$55.00	
Type II ROW Monument - Poured 2-3 Feet (Includes One Call, crew time, equipment, materials, rentals, labor.) Brass Marker supplied by TxDOT.	each	$200.00	
Reprographics	per sq ft	$3.00	

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use)	Hour	$80.00	
Ground Target (includes paint, panel material, etc.)	Each	$20.00	
Ground Penetrating Radar (equipment only)	day	$126.25	
Sub-Bottom Profiler	day	$110.00	
Laser Scanner	hour	$80.00	
Laser Scanning	day	$2,600.00	
LiDAR Mobile Mapping System, (Includes Vehicle Operator, LiDAR Technician Mileage on Project and Fuel) (Does Not Include travel to project.)	Day	$8,000.00	
24-Hour Automated Tube Counts - Volume	per counter/day	$100.00	
24-Hour Automated Tube Counts - Bi-directional	per counter/day	$140.00	
24-Hour Automated Tube Counts - Urban Freeway Main Lanes	per counter/day	$250.00	
24-Hour Automated Tube Counts - Speed or Class	per counter/day	$150.00	
24-Hour Volume Video Counts - Main Lanes	per camera/day	$175.00	
24-Hour Classification Video Counts - Main Lanes	per camera/day	$190.00	
Intersection Turning Movement Counts	per counter/hour/day	$150.00	
Turning Movement Count (12-hour Manual) Minor Intersection	each	$700.00	
Turning Movement Count (12-hour Manual) Major Intersection	each	$1,500.00	
2-hour Turning Movement Count, Minor Intersection, Weekday	each	$275.00	
2-hour Turning Movement Count, Major Intersection, Weekday	each	$425.00	
2-hour Turning Movement Count, Minor Intersection, Weekend	each	$300.00	
2-hour Turning Movement Count, Major Intersection, Weekend	each	$450.00	
Travel Time Runs in DMI-Equipped Vehicle (Includes labor and mileage)	hour	$155.00	
Speed Survey (location)	per location	$150.00	
Intersection Photography	per intersection	$75.00	
Video Origin & Destination (capture)	per camera intersection/ location	$500.00	

Profit not allowed on Other Direct Expenses.

For Cost Plus Fixed Fee, Specified Rate, and Unit Cost - Unless fixed, actual rates to be billed not to exceed the maximum shown. Documentation such as receipts or usage logs for other direct expenses are necessary for reimbursement, except for meals. **For Lump Sum** - No documentation required. Invoicing by physical percent complete includes combination of direct labor and other direct expenses.

NOTE: For Cost Plus Fixed Fee, Specified Rate, and Unit Cost - Miscellaneous other direct expenses up to $100 per unit will be reimbursed at cost if approved and documented in advance by the State's Project Manager. Miscellaneous other direct expenses of $100 per unit or more will not be reimbursed unless a supplemental agreement to the contract and work authorization (if WAs are used) has been executed in advance authorizing the miscellaneous other direct expenses. No more than $2,500 in miscellaneous other direct expenses may be approved by the State's Project Manager over the life of this contract including prime provider and subproviders. **For Lump Sum** - This statement does not apply.

Summary	CAI		CH2M		HDR		LTRA		GAI		Halff		AEI		Totals	
	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee
FC 110	10861	$ 1,270,245.29	4728	$ 491,507.08	3048	$ 393,996.22	456	$ 51,656.24			2192	$ 248,673.92			21285	$ 2,456,078.75
FC 120	5949	$ 812,181.60	52	$ 7,570.64	24	$ 4,766.64							1421	$ 129,328.75	7446	$ 953,847.63
FC 130	198	$ 28,685.58					Utilities	$ 579,164.00	2170	$ 242,663.60					2368	$ 850,513.18
FC 150	48	$ 6,629.84					568	$ 69,615.40	952	$ 121,297.12					1568	$ 197,542.36
FC 161	106	$ 15,693.22					1944	$ 237,605.36							2050	$ 253,298.58
FC 163	318	$ 46,802.22			198	$ 25,364.70									516	$ 72,166.92
FC 164	1868	$ 292,502.12	256	$ 23,458.32			264	$ 45,000.24	24	$ 2,600.80					2412	$ 363,561.48
ODEs - FC 110		$ 291,236.20		$ 7,538.10		$ 27,389.00		$ 15,145.20				$ 1,913.40				$ 343,221.90
ODEs - FC 120										$ 2,374.00				$ 18,370.00		$ 18,370.00
ODEs - FC 150																$ 2,374.00
Totals	19348	$ 2,763,976.07	5036	$ 530,074.14	3270	$ 451,516.56	3232	$ 998,186.44	3146	$ 368,935.52	2192	$ 250,587.32	1421	$ 147,698.75	37645	$ 5,510,974.80

SUMMARY				
FIRM	Total hrs	Total $	Percent	
Civil Associates, Inc. - PRIME	19188	$ 2,763,976.07	50.15%	
CH2MHill, Inc.	5036	$ 530,074.14	9.62%	
HDR Engineering, Inc.	3270	$ 451,516.56	8.19%	
Lina T. Ramey and Associates, Inc.	3232	$ 998,186.44	18.11%	HUB
Gorrondona & Associates, Inc.	3146	$ 368,935.52	6.69%	HUB
Halff Associates, Inc.	2192	$ 250,587.32	4.55%	
AmaTerra Environmental, Inc.	1421	$ 147,698.75	2.68%	HUB
Totals	37485	$ 5,510,974.80	100.00%	

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 141.98	$ 118.80	$ 81.13	$ 113.01	$ 86.93	$ 55.05	$ 101.42	$ 73.02	$ 57.95	$ 173.86	$ 128.42	$ 101.42	$ 81.13	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Jr. Engineer Tech	Senior CADD Operator	CADD Operator	Jr. CADD Operator	Sr. Env. Planner	Env. Planner IV	Env. Planner III	Env Planner I/II	Total Cost
Route and Design Studies (FC 110)																
Schematic Design - General Tasks																
Data Collection and Field Reconnaissance																
Record plans, existing schematics, ROW maps, and prev. corridor studies	0	8						8								$ 1,947.20
Utility plans and documents; subsurface utility mapping	0	2	4	8												$ 1,895.02
Readily available flood plain information and studies	0	4	6													$ 1,605.28
Obtain Graphic files, plans, documents, and other data for corridor	0	4	6				12									$ 2,648.44
Obtain existing photogrammetric data	0															
Conduct field reconnaissance and collect data	16		16									16	16			$ 10,817.12
Project area site visits	8			8			8						8	8		$ 5,339.04
Obtain NCTCOG Mobility 2035 and Mobility 2040 databases	2															$ 463.62
Preliminary Design Summary Report and Criteria	8	8		8			16									$ 5,702.56
Utility Base Map	0			2			4									$ 585.32
Typical Sections	6							16								$ 2,271.66
Environmental Constraints	0						4								4	$ 672.24
Drainage		2					12		16							$ 3,042.58
ROW Requirements				2			12		30							$ 4,323.36
Develop Travel Forecast and Modal Splits	0						8									$ 695.44
Traffic Projections Methodology Memo and Avg. Daily Corridor Traffic Projections		12		6			16									$ 4,363.88
Traffic Analyses	0															
Develop micro-simulation models in VISSIM to validate the HCS LOS results	0	4					4									$ 1,101.12
Synchro Intersection analysis	0	4					4									$ 1,101.12
Bicycle and pedestrian accommodations	0		16													$ 2,271.68
High Occupancy Vehicle and High Occupancy Lanes	0	24		4			4									$ 5,343.32
Conceptual Design Schematics Alternatives	183	70		100	700	900			200	360						$ 272,556.93
Refine Conceptual Schematic Design Alternatives																
Review and Develop Alternatives	40	80	36	144	480	620			100		240	120	80	160		$ 226,981.48
Refine Travel Demand	0							14								$ 770.70
Selection of Preferred Alternative	16	16	24	84	128	136			12	40						$ 50,001.12
Assess Effects to Regional Transportation Plan and Regional Congestion Mgmt.	16				96											$ 11,497.44
Primary Alternative Analysis Documentation	12				24											$ 4,728.84
Cross Sections, Earthwork, and Retaining Walls	8	14			40	80			36							$ 20,428.50
QA/QC	120	200														$ 65,487.20
Review Meetings	34				34							34				$ 16,551.20
Geometric Design Schematics	60	100	160	100	800	600			160							$ 216,277.60
IAJR	24	32	32	120		32										$ 34,006.32
Design Exceptions	0	40	40		80		40									$ 23,180.80
Value Engineering (VE) Study	30	30		30	50											$ 20,225.30
Traffic Analysis Report	12	50			32											$ 14,795.38
Phasing Exhibits	24	160		30	160	64			760							$ 136,556.08
Preliminary Cost Estimate	8	80		80	160											$ 39,407.28
Engineering Summary Report	20				100											$ 12,749.20
Collection of Data, Reports and Maps	0		24							16		18	24			$ 10,787.40
Update the Technical Methodology Plan	8	40		40												$ 14,140.48
Design Visualization - 3D Computer Modeling	8	20				8										$ 6,525.56
Construction Sequence	8	32	60													$ 16,400.48
Subtotal Hours:	**671**	**1036**	**424**	**766**	**2884**	**2440**	**144**	**38**	**1314**	**416**	**240**	**188**	**128**	**168**	**4**	**$ 1,270,245.29**
Subtotal Labor Cost:	**$ 155,544.51**	**$ 195,130.60**	**$ 60,199.52**	**$ 91,000.80**	**$ 233,978.92**	**$ 275,744.40**	**$ 12,517.92**	**$ 2,091.90**	**$ 133,265.88**	**$ 30,376.32**	**$ 13,908.00**	**$ 32,685.68**	**$ 16,437.76**	**$ 17,038.56**	**$ 324.52**	**$ 1,270,245.29**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 141.98	$ 118.80	$ 81.13	$ 113.01	$ 86.93	$ 55.05	$ 101.42	$ 73.02	$ 57.95	$ 173.86	$ 128.42	$ 101.42	$ 81.13	$ 79.48	$ 60.85	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Jr. Engineer Tech	Senior CADD Operator	CADD Operator	Jr. CADD Operator	Sr. Env. Planner	Env. Planner IV	Env. Planner III	Env Planner I/II	Project Controller	Admin / Clerical	Total Cost
Social, Economic and Environmental Studies and Public Involvement (FC 120)																		
Technical Work Group	54		68									68					24	$ 35,455.26
Environmental Documentation																		
Quality Assurance/Quality Control Review	40											40						$ 16,226.80
Deliverables of data acquired during the environmental service	0												1		1			$ 209.55
Electronic versions of each deliverable	0												1		1			$ 209.55
Environmental service permits	0											1						$ 173.86
Submission of Deliverables	0												1		1			$ 209.55
Deliverable revisions	0											1						$ 173.86
Photographs and electronic photograph presentations	0														1			$ 81.13
Risk Assessments, Project Scope and Technical Reports	8									20		400	240					$ 103,679.68
EA regulatory requirements	0											80	70	100				$ 33,040.20
Exhibits included in reports or EAs	0								40		60		30		35			$ 14,225.95
EA maps and exhibits	15								55			30		60				$ 20,356.25
Land Use and Community Impacts	0											8			8			$ 2,039.92
Environmental Justice	0											6			6			$ 1,529.94
Limited English Proficiency	0											4			4			$ 1,019.96
Historic Resource Identification, Evaluation, and Documentation Services	0											6						$ 1,043.16
Historic Resources Survey Reports	0											12						$ 2,086.32
Intensive Survey for Historic Resources	0											1						$ 173.86
Archeological Background Studies	0											4						$ 695.44
Archeological Surveys	0											4						$ 695.44
Air Quality Studies	2								40			80	180					$ 41,544.82
Traffic Noise Studies (plus 2 workshops)	2								240			160	200					$ 78,306.02
Water Quality Studies	0											8						$ 1,390.88
Determining Impacts to Waters of the US, including Wetlands	0				4				8			58		56				$ 16,899.28
Floodplain Impacts	0				6					6		35	44					$ 12,660.48
Stormwater Permits	0	2			2								2		2			$ 958.06
USACE Permits assume 2 NWP PCN	0				0					10		120	140					$ 39,572.20
Water Body Modifications and Wildlife Impacts	0												2					$ 256.84
Threatened or Endangered Species	0								4	10		54		54				$ 16,001.00
Invasive Species	0														1			$ 81.13
Beneficial Landscaping	0														1			$ 81.13
Farmland Impacts															1			$ 81.13
Initial Assessment of Hazardous Materials Impacts										4		36		10				$ 7,565.24
Regional Toll Analysis	8				8							8	4					$ 4,408.08
Public Involvement																		
Perform PI activities in accordance with TAC	0												2					$ 256.84
Develop PI plan that specifies activities to be performed and alternatives to be discussed	0	4										48		80				$ 17,212.28
Compile, maintain, and update mailing list	0	2							40				80		0		100	$ 20,792.10
Make arrangements and pay for MAPOs, public meetings, and hearings	0	4											40					$ 5,890.20
Submit all legal notices to State for review no less than two weeks prior to publication	0	2										2		2				$ 927.26
Arrange meeting with State to review all exhibits and other materials prior to PM and PH	24				80	60						24	24				0	$ 26,089.16
Obtain State approval for legal notices, exhibits, and other materials	0	10										10						$ 3,622.10
Provide personnel to staff meetings and hearings	18	18			18				18			18	18					$ 16,289.82
Develop and submit to State written summary of PM including when and where PM conducted	0	6			2							60						$ 11,723.96
Develop and submit to State a comment and response report, summary and analysis report, required certification, verbatim public hearing trasncript, and other information necessary to evaluate and disseminate information from public hearing	6				10							90	120					$ 33,259.96

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 141.98	$ 118.80	$ 81.13	$ 113.01	$ 86.93	$ 55.05	$ 101.42	$ 73.02	$ 57.95	$ 173.86	$ 128.42	$ 101.42	$ 81.13	$ 79.48	$ 60.85	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Jr. Engineer Tech	Senior CADD Operator	CADD Operator	Jr. CADD Operator	Sr. Env. Planner	Env. Planner IV	Env. Planner III	Env Planner I/II	Project Controller	Admin / Clerical	Total Cost
Develop and send letters and response letters to commenters at PM or PH	0				8							28		100			48	$ 18,579.92
Develop, publish, and distribute newsletter on Transportaion Activity	0	8			48				72			120	140				48	$ 54,466.08
Develop and maintain a website to disseminate inromation on Transportation Activity and to gather comments from public	0	16			8				96			54		96			14	$ 33,375.62
Project Logo or Insignia		4	12			4						8						$ 4,300.08
Section 4(f) Evaluations - de minimis	0								1			6	8					$ 2,171.94
Technical Support	36				45					40		180		180				$ 64,467.21
Coordination Meetings (10 mtgs)	50											50				-		$ 20,283.50
Coordination Meeting Support		80			0							0	80					$ 25,341.60
Subtotal Hours:	**263**	**156**	**80**	**0**	**239**	**64**	**0**	**0**	**614**	**90**	**60**	**1922**	**1427**	**738**	**62**	**0**	**234**	**$ 812,181.60**
Subtotal Labor Cost:	**$ 60,966.03**	**$ 29,382.60**	**$ 11,358.40**	**$ -**	**$ 19,390.07**	**$ 7,232.64**	**$ -**	**$ -**	**$ 62,271.88**	**$ 6,571.80**	**$ 3,477.00**	**$ 334,158.92**	**$ 183,255.34**	**$ 74,847.96**	**$ 5,030.06**	**$ -**	**$ 14,238.90**	**$ 812,181.60**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 81.13	$ 113.01	$ 173.86	$ 128.42	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	EIT	Senior Engineer Tech	Sr. Env. Planner	Env. Planner IV	Total Cost
Ownership Data, ROW Mapping and Utility Location (FC 130)							
Exhibits	4	6					$ 2,057.34
Parcel plat	4	6					$ 2,057.34
ROW Maps Deliverables	4	6					$ 2,057.34
GIS Submission Requirements and Standards		1					$ 188.35
Electronic ROW Mapping Standards		1					$ 188.35
Utilities Engineer Investigations	8						$ 1,854.48
Ownership Data and Update ROW Data							
Evaluate and update ROW needs to determine if additional ROW easements are required	4		24	24	8	12	$ 8,518.52
Include on schematic location of new driveways from previous schematic	4		24	24	8	12	$ 8,518.52
Subconsultant Coordination and Oversight	14						$ 3,245.34
Subtotal Hours:	**42**	**20**	**48**	**48**	**16**	**24**	**$ 28,685.58**
Subtotal Labor Cost:	**$ 9,736.02**	**$ 3,767.00**	**$ 3,894.24**	**$ 5,424.48**	**$ 2,781.76**	**$ 3,082.08**	**$ 28,685.58**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 81.13	$ 113.01	$ 101.42	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	EIT	Senior Engineer Tech	Senior CADD Operator	Total Cost
Field Surveying and Photogrammetry (FC 150)						
Review of Data	8		8	16	8	$ 5,123.04
Technical Documentation		8				$ 1,506.80
Subtotal Hours:	**8**	**8**	**8**	**16**	**8**	**$ 6,629.84**
Subtotal Labor Cost:	**$ 1,854.48**	**$ 1,506.80**	**$ 649.04**	**$ 1,808.16**	**$ 811.36**	**$ 6,629.84**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.

BASIS SERVICES Task Descriptions	Senior Project Manager $ 231.81	Project Engineer $ 141.98	EIT $ 81.13	Total Cost
Drainage (FC 161)				
Cross Road Drainage Structures	8	24	8	$ 5,911.04
Data Collection for Culvert or Bridge locations				
Hydrologic Studies - Discharges				
Prepare Drainage Area Maps and determine drainage areas				
For each drainage structure perform the following:				
Determine soils and land use boundaries and composite values				
Deteremine runoff coefficient				
Determine timing parameter				
Model creation and output for existing and proposed				
Hydraulic Drainage Design	10	48	8	$ 9,782.18
Perform the following for non-bridge class culvert models:				
Perform the following for bridge class culverts and bridge structures:				
Subtotal Hours:	**18**	**72**	**16**	**$ 15,693.22**
Subtotal Labor Cost:	**$ 4,172.58**	**$ 10,222.56**	**$ 1,298.08**	**$ 15,693.22**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 118.80	$ 81.13	$ 113.01	$ 101.42	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Design Engineer	EIT	Senior Engineer Tech	Senior CADD Operator	Total Cost
Miscellaneous (Roadway) (FC 163)							
Traffic control plan (TCP)	24	24	72	78	24	24	$ 30,111.90
Quality Control/Assurance Reviews	18						$ 4,172.58
Agreements	54						$ 12,517.74
Subtotal Hours:	**96**	**24**	**72**	**78**	**24**	**24**	**$ 46,802.22**
Subtotal Labor Cost:	**$ 22,253.76**	**$ 4,520.40**	**$ 8,553.60**	**$ 6,328.14**	**$ 2,712.24**	**$ 2,434.08**	**$ 46,802.22**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Prime Provider Name: Civil Associates, Inc.	$ 231.81	$ 188.35	$ 141.98	$ 118.80	$ 81.13	$ 113.01	$ 173.86	$ 79.48	$ 60.85	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Sr. Env. Planner	Project Controller	Admin / Clerical	Total Cost
Managing Contracted or donated PS&E PE Services (FC 164)										
Financial Plan										
Initial Financial Plan will consist of at least 5 sections:										
Cost Estimate	0	8			24					$ 3,453.92
Implementation Plan	0	32								$ 6,027.20
Financing and Revenues	0	24			14					$ 5,656.22
Cash Flow	0	32								$ 6,027.20
Risk Identification and Mitigation Factors	0	40								$ 7,534.00
Submit FP and FP AU in project finances and funding resources	0	36			24				4	$ 8,971.12
Submit FP and FP AU for scoping purposes	0	24			18					$ 5,980.74
PMP will be updated to identify project organization and responsibilities	80	80								$ 33,612.80
Progress Reports and Invoices	72		72						288	$ 44,437.68
Coordination and Administration	84				48		36		14	$ 30,477.14
Up to ten coordination meetings + 36 calls	78	78		78			78			$ 55,599.96
Project Close-out	12					8	8	8		$ 5,712.52
Quality Management Plan	8									$ 1,854.48
Control and Scheduling										
Prepare a Gantt chart and Primavera project schedule	18	216			80					$ 51,346.58
Production management meetings (monthly)	36		0				36			$ 14,604.12
Subconsultant Mangement	36							36		$ 11,206.44
Subtotal Hours:	**424**	**570**	**72**	**78**	**208**	**8**	**158**	**44**	**306**	**$ 292,502.12**
Subtotal Labor Cost:	**$ 98,287.44**	**$ 107,359.50**	**$ 10,222.56**	**$ 9,266.40**	**$ 16,875.04**	**$ 904.08**	**$ 27,469.88**	**$ 3,497.12**	**$ 18,620.10**	**$ 292,502.12**

Other Direct Expenses to be charged to: **FC-110 Route and Design Studies**

Provider Name: Civil Associates, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Mileage	mile	$ 0.575		4,400	$ 2,530.00
Toll Charges	each		$ 2.00	30	$ 60.00
Standard Postage	letter	$ 0.49		20,400	$ 9,996.00
Overnight Mail - letter size	each		$ 25.00	40	$ 1,000.00
Overnight Mail - oversized box	each		$ 30.00	20	$ 600.00
Overnight Mail - large schematic rolls	each		$ 35.00	18	$ 630.00
Courier Services	each		$ 40.00	22	$ 880.00
Photocopies B/W (8 1/2" X 11")	each	$ 0.10		45,872	$ 4,587.20
Photocopies B/W (11" X 17")	each	$ 0.20		1,320	$ 264.00
Photocopies Color (8 1/2" X 11")	each	$ 0.65		25,600	$ 16,640.00
Photocopies Color (11" X 17")	each	$ 1.25		19,030	$ 23,787.50
Digital Ortho Plotting	sheet	$ 1.50		14,400	$ 21,600.00
Plots (B/W on Bond)	square foot	$ 0.50		18,000	$ 9,000.00
Plots (Color on Bond)	square foot	$ 1.00		70,500	$ 70,500.00
Plots (Color on Photographic Paper)	square foot	$ 4.00		7,200	$ 28,800.00
Color Graphics on Foam Board	square foot	$ 5.00		1,200	$ 6,000.00
Presentation Boards 30" X 40" Color Mounted	each		$ 75.00	25	$ 1,875.00
Report Printing	each		$ 50.00	22	$ 1,100.00
Report Binding and Tabbing	each	$ 5.00		207	$ 1,035.00
Notebooks	each		$ 5.00	40	$ 200.00
Reproduction of CD/DVD	each		$ 4.00	28	$ 112.00
CDs	each	$ 1.50		28	$ 42.00
4" X 6" Digital Color Print	picture	$ 0.25		50	$ 12.50
Tx Parks & Wildlife Data Request Fees	each		$ 40.00	1	$ 40.00
Hazardous Materials Database Search	per search		$ 500.00	1	$ 500.00
Noise Meter Rental	per project		$ 75.00	1	$ 75.00
Environmental Database Search	mile (or per project)		$ 1,000.00	1	$ 1,000.00
Environmental Field Supplies (lathes, stakes,	day		$ 30.00	5	$ 150.00
Newspaper Advertisement	per publication		$ 9,000.00	7	$ 63,000.00
Court Reporter (Public Meetings, Hearings & Transcription)	day		$ 500.00	3	$ 1,500.00
Translator (English to Spanish, other language as appropriate, or Sign Language) for Public	event		$ 500.00	3	$ 1,500.00
Custodian for Public Involvement	hour/custodian		$ 30.00	18	$ 540.00
Sound Technican for Public Involvement	event		$ 300.00	3	$ 900.00
Public Involvement Facilty Rental	event		$ 1,000.00	7	$ 7,000.00
Public Involvement Facilty Rental (estimate)	hour		$ 150.00	20	$ 3,000.00
Audio - Visual Equipment Rental	event		$ 450.00	3	$ 1,350.00
Audio - Equipment Rental	each		$ 300.00	1	$ 300.00
Public Notices - Mass Mailing	each		$ 400.00	6	$ 2,400.00
Electronic Message Signs	day		$ 200.00	15	$ 3,000.00
FEMA FIS (Manual)	each		$ 5.00	6	$ 30.00
FEMA Maps	each		$ 5.00	6	$ 30.00
Backhoe Rental	day		$ 950.00	2	$ 1,900.00
Maps, Tapes and supplies	each	$ 4.00		5	$ 20.00
GPS Receiver (rates applied to actual time GPS units are in use)	hour	$ 25.00		70	$ 1,750.00
					$ 291,236.20

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: CH2M HILL, INC.	$ 159.24	$ 131.94	$ 125.11	$ 104.64	$ 93.27	$ 72.79	$ 147.86	$ 120.56	$ 45.50	
BASIS SERVICES Task Descriptions	Project Manager	Quality Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Structural Engineer	Structural Engineer	Admin / Clerical	Total Cost
Route and Design Studies (FC 110)										
Schematic Design - General Tasks										
Data Collection and Field Reconnaissance										
Conduct field reconnaissance and collect data	16		16							$ 4,549.60
ROW Requirements				24		16				$ 3,676.00
Bicycle and pedestrian accommodations			8			8				$ 1,583.20
High Occupancy Vehicle and High Occupancy Lanes			8	12						$ 2,256.56
Refine Conceptual Schematic Design Alternatives										
Review and Develop Alternatives	32		48	160	160	220	60	100		$ 79,707.96
Selection of Preferred Alternative	60		80	200	320	320	80	200		$ 129,571.20
Cross Sections, Earthwork, and Retaining Walls	24		60	96	120	200				$ 47,124.20
QA/QC	80	160							40	$ 35,669.60
Review Meetings	8		16	8						$ 4,112.80
Geometric Design Schematics	60		100	280	320	320	100	240		$ 148,224.20
Preliminary Cost Estimate	16		16	60	120	80	16	40		$ 35,031.76
Subtotal Hours:	**296**	**160**	**352**	**840**	**1040**	**1164**	**256**	**580**	**40**	**$ 491,507.08**
Subtotal Labor Cost:	**$ 47,135.04**	**$ 21,110.40**	**$ 44,038.72**	**$ 87,897.60**	**$ 97,000.80**	**$ 84,727.56**	**$ 37,852.16**	**$ 69,924.80**	**$ 1,820.00**	**$ 491,507.08**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: CH2M HILL, INC.

BASIS SERVICES Task Descriptions	Project Manager $ 159.24	Senior Engineer $ 125.11	Project Engineer $ 104.64	Total Cost
Social, Economic and Environmental Studies and Public Involvement (FC 120)				
Technical Work Group	8	8	8	$ 3,111.92
Provide personnel to staff meetings and hearings	16			$ 2,547.84
Coordination Meetings	12			$ 1,910.88
Subtotal Hours:	**36**	**8**	**8**	**$ 7,570.64**
Subtotal Labor Cost:	**$ 5,732.64**	**$ 1,000.88**	**$ 837.12**	**$ 7,570.64**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: CH2M HILL, INC.	$ 159.24	$ 104.64	$ 45.50	
BASIS SERVICES Task Descriptions	Project Manager	Project Engineer	Admin / Clerical	Total Cost
Managing Contracted or donated PS&E PE Services (FC 164)				
Progress Reports and Invoices	36	72	108	$ 18,180.72
Coordination and Administration				
Up to ten coordination meetings	20	20		$ 5,277.60
Subtotal Hours:	**56**	**92**	**108**	**$ 23,458.32**
Subtotal Labor Cost:	**$ 8,917.44**	**$ 9,626.88**	**$ 4,914.00**	**$ 23,458.32**

Other Direct Expenses to be charged FC-110 Route and Design Studies

Subprovider Name: CH2MHill, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Lodging/Hotel (Taxes/fees not included)	day/person		$ 144.00	6.00	$864.00
Lodging/Hotel - Taxes and Fees	day/person		$ 21.60	6.00	$129.60
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person		$ 51.00	12.00	$612.00
Mileage	mile	$ 0.575		1000.00	$575.00
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day		50.00	6.00	$300.00
Rental Car Fuel	gallon		3.75	30.00	$112.50
Rental Car Fuel	day		25.00	12.00	$300.00
Air Travel - In State - Short Notice (Coach)	Rd Trip/person		450.00	2.00	$900.00
Parking	day		20.00	12.00	$240.00
Toll Charges	each		2.00	40.00	$80.00
Overnight Mail - oversized box	each		30.00	10.00	$300.00
Overnight Mail - large schematic rolls	each		35.00	10.00	$350.00
Courier Services	each		40.00	5.00	$200.00
Photocopies B/W (8 1/2" X 11")	each	0.10		500.00	$50.00
Plots (Color on Bond)	square foot	1.00		2000.00	$2,000.00
Presentation Boards 30" X 40" Color Mounted	each		75.00	6.00	$450.00
Notebooks	each		5.00	4.00	$20.00
Reproduction of CD/DVD	each		4.00	10.00	$40.00
CDs	each	1.50		10.00	$15.00
				Total	$7,538.10

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: HDR Engineering, Inc.	$ 198.61	$ 170.23	$ 139.02	$ 116.33	$ 93.63	$ 110.65	$ 85.12	$ 59.58	
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Admin / Clerical	Total Cost
Route and Design Studies (FC 110)									
Schematic Design - General Tasks									
Develop Travel Forecast and Modal Splits	24	40	40	64		40			$ 29,007.76
Traffic Projections Methodology Memo and Avg. Daily Corridor Traffic Projections	48	64	80	80	80	80			$ 57,198.40
Traffic Analyses									
Develop micro-simulation models in VISSIM to validate the HCS LOS results	30		160	180			40	20	$ 53,737.30
SYNCHRO Intersection analysis	20		40	200					$ 32,799.00
Conceptual Design Schematics Alternatives	16	24			80				$ 14,753.68
Refine Conceptual Schematic Design Alternatives									
Review and Develop Alternatives	16	40	64		80				$ 26,374.64
Refine Travel Demand	8	16	40		80				$ 17,363.76
Selection of Preferred Alternative	4	8	16		40				$ 8,125.80
Assess Effects to Regional Transportation Plan and Regional Congestion Mgmt.	4	8	8		24				$ 5,515.56
QA/QC	40								$ 7,944.40
Review Meetings	30	30							$ 11,065.20
IAJR	20	60	140	460			20	20	$ 90,054.60
Traffic Analysis Report	8	32		8			20	20	$ 10,860.88
Update the Technical Methodology Plan	24		80	80			40	10	$ 29,195.24
Subtotal Hours:	**292**	**322**	**668**	**1072**	**384**	**120**	**120**	**70**	**$ 393,996.22**
Subtotal Labor Cost:	**$ 57,994.12**	**$ 54,814.06**	**$ 92,865.36**	**$ 124,705.76**	**$ 35,953.92**	**$ 13,278.00**	**$ 10,214.40**	**$ 4,170.60**	**$ 393,996.22**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: HDR Engineering, Inc.

	$ 198.61	
BASIS SERVICES Task Descriptions	Project Manager	Total Cost
Social, Economic and Environmental Studies and Public Involvement (FC 120)		
Coordination Meetings	24	$ 4,766.64
Subtotal Hours:	**24**	**$ 4,766.64**
Subtotal Labor Cost:	**$ 4,766.64**	**$ 4,766.64**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: HDR Engineering, Inc.	$ 198.61	$ 170.23	$ 139.02	$ 93.63	
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	EIT	Total Cost
Miscellaneous (Roadway) (FC 163)					
Agreements	18	36	48	96	$ 25,364.70
Subtotal Hours:	**18**	**36**	**48**	**96**	**$ 25,364.70**
Subtotal Labor Cost:	**$ 3,574.98**	**$ 6,128.28**	**$ 6,672.96**	**$ 8,988.48**	**$ 25,364.70**

Other Direct Expenses to be charged to: FC-110 Route and Design Studies

Subprovider Name: HDR Engineering, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Mileage	mile	$ 0.575		3200	$ 1,904.00
Photocopies B/W (8 1/2" X 11")	each	$ 0.10		400	$ 40.00
Photocopies B/W (11" X 17")	each	$ 0.20		200	$ 40.00
Photocopies Color (8 1/2" X 11")	each	$ 0.65		200	$ 130.00
Photocopies Color (11" X 17")	each	$ 1.25		100	$ 125.00
2-hour Turning Movement Count, Major Intersection, Weekday	each	$ 425.00	$ 425.00	50	$ 21,250.00
Speed Survey (location)	per location	$ 150.00	$ 150.00	6	$ 900.00
Video Origin & Destination (capture)	per camera intersection/ location	$ 500.00	$ 500.00	6	$ 3,000.00
				Total	$27,389.00

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Lina T. Ramey and Associates, Inc.	$ 200.79	$ 172.11	$ 140.56	$ 117.61	$ 94.66	$ 97.53	$ 80.32	
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Total Cost
Route and Design Studies (FC 110)								
Schematic Design - General Tasks								$ -
Data Collection and Field Reconnaissance								$ -
Record plans, existing schematics, ROW maps, and prev. corridor studies	16	16		24	24	24		$ 13,401.60
Drainage	24	24	24	40	40	80	120	$ 38,254.64
Subtotal Hours:	**40**	**40**	**24**	**64**	**64**	**104**	**120**	**$ 51,656.24**
Subtotal Labor Cost:	**$ 8,031.60**	**$ 6,884.40**	**$ 3,373.44**	**$ 7,527.04**	**$ 6,058.24**	**$ 10,143.12**	**$ 9,638.40**	**$ 51,656.24**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Lina T. Ramey and Associates, Inc..	$ 140.56	$ 117.61	$ 88.92	$ 97.53	$ 65.97	$ 145.00	
BASIS SERVICES Task Descriptions	Project Engineer	Design Engineer	Engineer Tech	Senior CADD Operator	Admin / Clerical	2- person survey crew	Total Cost
Field Surveying and Photogrammetry (FC 150)							
Technical Documentation							$ -
Major Drainage areas (9)	20	48	60	60	12	184	$ 47,115.12
Drainage culverts (62)	20	24	24	24	12	80	$ 22,500.28
Grate Inlets Flow line and Size (250)							
Subtotal Hours:	**40**	**72**	**84**	**84**	**24**	**264**	**$ 69,615.40**
Subtotal Labor Cost:	**$ 5,622.40**	**$ 8,467.92**	**$ 7,469.28**	**$ 8,192.52**	**$ 1,583.28**	**$ 38,280.00**	**$ 69,615.40**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Lina T. Ramey and Associates, Inc.	$ 200.79	$ 172.11	$ 140.56	$ 117.61	$ 94.66	$ 97.53	$ 80.32	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Total Cost
Drainage (FC 161)								
Cross Road Drainage Structures								$ -
Data Collection for Culvert or Bridge locations	8	8	12		12	12		$ 6,976.20
Hydrologic Studies - Discharges	16	40	56	56	72	24	24	$ 35,638.48
Up to 15 non-bridge class culvert models	20	64	80	80	80	0	0	$ 43,257.24
Bridge class culverts and bridge structures analysis	12	16	48	64	64	0	0	$ 25,495.40
Hydraulic Reports	12	16	120	120	120	16	16	$ 50,348.44
Preliminary Hydraulic Data Sheets (Bridge Class and Bridge Drainage Structures)	8	8	16	16	16	8	8	$ 10,051.28
Preliminary Culvert Layouts (Bridge Class Culvert Drainage Structures)	16	16	40	64	80	80	80	$ 40,916.64
Technical Memorandum	8	24	24	40	40	0	0	$ 17,601.20
Drainage Quantities		8	8	16	16	8	8	$ 7,320.48
								$ -
Subtotal Hours:	**100**	**200**	**404**	**456**	**500**	**148**	**136**	**$ 237,605.36**
Subtotal Labor Cost:	**$ 20,079.00**	**$ 34,422.00**	**$ 56,786.24**	**$ 53,630.16**	**$ 47,330.00**	**$ 14,434.44**	**$ 10,923.52**	**$ 237,605.36**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Lina T. Ramey and Associates, Inc.	$ 200.79	$ 172.11	$ 65.97	
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Admin / Clerical	Total Cost
Managing Contracted or donated PS&E PE Services (FC 164)				
Financial Plan				
Cost Estimate	24	24		$ 8,949.60
Progress Reports and Invoices	18	18	36	$ 9,087.12
Coordination and Administration				
Up to ten coordination meetings	40	32		$ 13,539.12
Production managemen tmeetings (monthly)	36	36		$ 13,424.40
Subtotal Hours:	**118**	**110**	**36**	**$ 45,000.24**
Subtotal Labor Cost:	**$ 23,693.22**	**$ 18,932.10**	**$ 2,374.92**	**$ 45,000.24**

Subprovider Name: Lina T. Ramey and Associates, Inc.

Sections	Linear Feet	QTY of Utililities	INTERSECTIONS	UTILITY CROSSING	TOTAL Est. LF
US 287	24,500	6	8	6	147,000
I-20	29,000	7	10	5	203,000
820	28,600	6	15	5	171,600
Total Linear Foot	**82,100**		**33**	**16**	
Total Miles	**15.5**				

	Sub Total LF	521,600
600 lf	33 Intersections	39,600
200 lf	16 Crossings	3,200
	Total LF	564,400

UTILITY SERVICES		Unit	Cost	
Services To Be Provided				
Mobilization/Demobilization		200	5.07	$1,014.00
Level C and D. Includes labor and equipment for records research, CADD, and mapping.		869,700	0.50	$434,850.00
Level B (Designation). Includes labor and equipment for records research, designating, engineering, surveying, and CADD.		100,000	1.30	$130,000.00
				$565,864.00

Level A (Location, Test Holes). Includes labor and equipment for vacuum excavation, engineering, surveying, and CADD.			EACH	COST PER	
Level A: 0 to 5 ft.			4	1,050.00	$4,200.00
Level A: > 5 to 8 ft.			2	1,250.00	$2,500.00
Level A: > 8 to 13 ft.			2	1,500.00	$3,000.00
Level A: > 13 to 20 ft.			2	1,800.00	$3,600.00
			10		**$13,300.00**

SUE Level A, B, C, D	$565,864.00
10 Test Holes	$13,300.00
TOTAL ESTIMATE	**$579,164.00**

Other Direct Expenses to be charged to: FC-110 Route and Design Studies

Subprovider Name: Lina T. Ramey and Associates, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Mileage	mile	$ 0.575		4000	$ 2,300.00
Certified Letter Return Receipt	each		$ 6.48	15	$ 97.20
CDs	each	$ 1.50		4	$ 6.00
FEMA Model/Floodplain Hardcopy	each		$ 250.00	9	$ 2,250.00
FEMA Maps	each		$ 5.00	20	$ 100.00
TARL Site Form Fee	per site		$ 23.00	24	$ 552.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of $1 Million required by RR.)	each		$ 2,600.00	1	$ 2,600.00
Traffic Control Services, Arrow Boards and Attenuator trucks - **Large Project** (Includes labor, equipment and fuel)	day		$ 2,800.00	2	$ 5,600.00
Boat with Motor	day		$ 350.00	4	$ 1,400.00
Maps, Tapes and supplies	each	$ 4.00		60	$ 240.00
				Total	$ 15,145.20

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Gorrondona & Associates, Inc.

BASIS SERVICES Task Descriptions	Project Manager $ 196.18	Senior Engineer Tech $ 106.50	Engineer Tech $ 86.88	Admin / Clerical $ 64.46	2- person survey crew $ 140.00	Total Cost
Right-of-Way Data and Utility Location						
Ownership Data	10		50	10		$ 6,950.40
Field Survey	50	440	830	30	750	$ 235,713.20
Subtotal Hours:	**60**	**440**	**880**	**40**	**750**	**$ 242,663.60**
Subtotal Labor Cost:	**$ 11,770.80**	**$ 46,860.00**	**$ 76,454.40**	**$ 2,578.40**	**$ 105,000.00**	**$ 242,663.60**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Gorrondona & Associates, Inc.	$ 196.18	$ 106.50	$ 86.88	$ 64.46	$ 95.00	$ 140.00	
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer Tech	Engineer Tech	Admin / Clerical	1- person survey crew	2- person survey crew	Total Cost
Field Surveying and Photogrammetry (FC 150)							
General Standards for Surveying	26	87	160	9	30	640	$ 121,297.12
Subtotal Hours:	**26**	**87**	**160**	**9**	**30**	**640**	**$ 121,297.12**
Subtotal Labor Cost:	**$ 5,100.68**	**$ 9,265.50**	**$ 13,900.80**	**$ 580.14**	**$ 2,850.00**	**$ 89,600.00**	**$ 121,297.12**

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Gorrondona & Associates, Inc.

BASIS SERVICES Task Descriptions	$ 196.18 Project Manager	$ 64.46 Admin / Clerical	Total Cost
Managing Contracted or donated PS&E PE Services (FC 164)			
Progress Reports and Invoices	8	16	$ 2,600.80
Subtotal Hours:	**8**	**16**	**$ 2,600.80**
Subtotal Labor Cost:	**$ 1,569.44**	**$ 1,031.36**	**$ 2,600.80**

Other Direct Expenses to be charged to: FC-150 Route and Design Studies

Subprovider Name: Gorrondona & Associates, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Certified Letter Return Receipt	each	$ 6.48		50	$ 324.00
Map Records	sheet		$ 2.00	100	$ 200.00
Deed Copies	sheet	$ 1.00		100	$ 100.00
Certified Deed Copies	sheet	$ 2.50		60	$ 150.00
Type II ROW Monument - Poured 2-3 Feet (Includes One Call, crew time, equipment, materials, rentals, labor.) Brass Marker supplied by TxDOT.	each	$ 200.00		8	$ 1,600.00
				Total	$ 2,374.00

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

Subprovider Name: Halff Associates, Inc.

BASIS SERVICES Task Descriptions	Senior Visual Technologist $ 136.68	Junior Visual Technologist $ 92.11	Design Engineer $ 118.85	Admin/ Clerical $ 62.40	Total Cost
Route and Design Studies (FC 110)					
Design Visualization - 3D Computer Modeling	1048	1108	20	16	$ 248,673.92
Subtotal Hours:	**1048**	**1108**	**20**	**16**	**$ 248,673.92**
Subtotal Labor Cost:	**$ 143,240.64**	**$ 102,057.88**	**$ 2,377.00**	**$ 998.40**	**$ 248,673.92**

Other Direct Expenses to be charged to: FC-110 Route and Design Studies

Subprovider Name: Half Associates, Inc.

Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Mileage	mile	$ 0.575		500	$ 287.50
Toll Charges	each		$ 2.00	10	$ 20.00
Standard Postage	letter	$ 0.49		10	$ 4.90
Overnight Mail - oversized box	each		$ 30.00	4	$ 120.00
Photocopies B/W (8 1/2" X 11")	each	$ 0.10		500	$ 50.00
Photocopies B/W (11" X 17")	each	$ 0.20		100	$ 20.00
Photocopies Color (8 1/2" X 11")	each	$ 0.65		100	$ 65.00
Photocopies Color (11" X 17")	each	$ 1.25		200	$ 250.00
Plots (Color on Bond)	square foot	$ 1.00		1000	$ 1,000.00
Reproduction of CD/DVD	each		$ 4.00	24.00	$ 96.00
				Total	$1,913.40

Highway: IH-820
CSJ: 0008-13-125
County: Tarrant

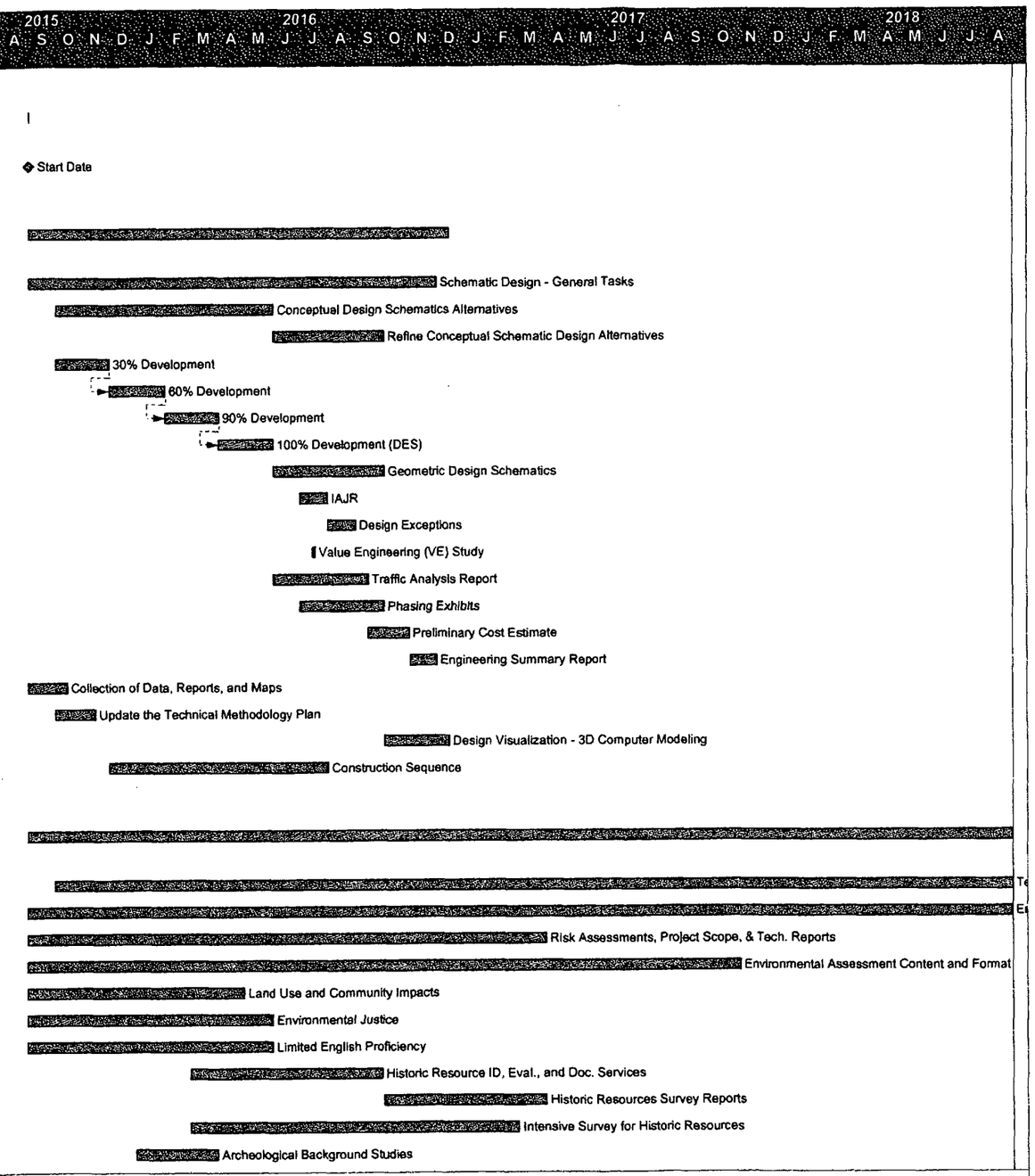
Subprovider Name: AmaTerra Environmental, Inc	$ 149.79	$ 145.92	$ 118.28	$ 90.23	$ 65.36	$ 115.74	$ 90.12	$ 89.19	$ 79.06	$ 82.82	$ 49.02	
BASIS SERVICES Task Descriptions	Project Manager	Quality manager	Senior Archeologist- Principal Investigator	Archeo III	Archeo II	Senior Architectural Historian	Historian III	Sr. Historian	Historian II	Senior Project Controller	Admin/ Clerical	Total Cost
Social, Economic and Environmental Studies and Public Involvement (FC 120)												
Historic Resource Identification, Evaluation, and Documentation Services	6	20		0		36	116	116	24	6		$ 31,178.10
Historic Resources Survey Reports	6	28		0		36	144	292	284		24	$ 71,801.42
Archeological Background Studies			6	3	8					6		$ 2,000.17
Archeological Surveys			16	86	30						12	$ 12,201.30
Section 4(f) Evaluations - de minimus		24				40	24		16		12	$ 12,147.76
Subtotal Hours:	**12**	**72**	**22**	**89**	**38**	**112**	**284**	**408**	**324**	**12**	**48**	
Subtotal Labor Cost:	**$ 1,797.48**	**$ 10,506.24**	**$ 2,602.16**	**$ 8,030.47**	**$ 2,483.68**	**$ 12,962.88**	**$ 25,594.08**	**$ 36,389.52**	**$ 25,615.44**	**$ 993.84**	**$ 2,352.96**	**$ 129,328.75**

Other Direct Expenses to be charged to:	FC-120 Route and Design Studies

Subprovider Name: AmaTerra Environmental, Inc.

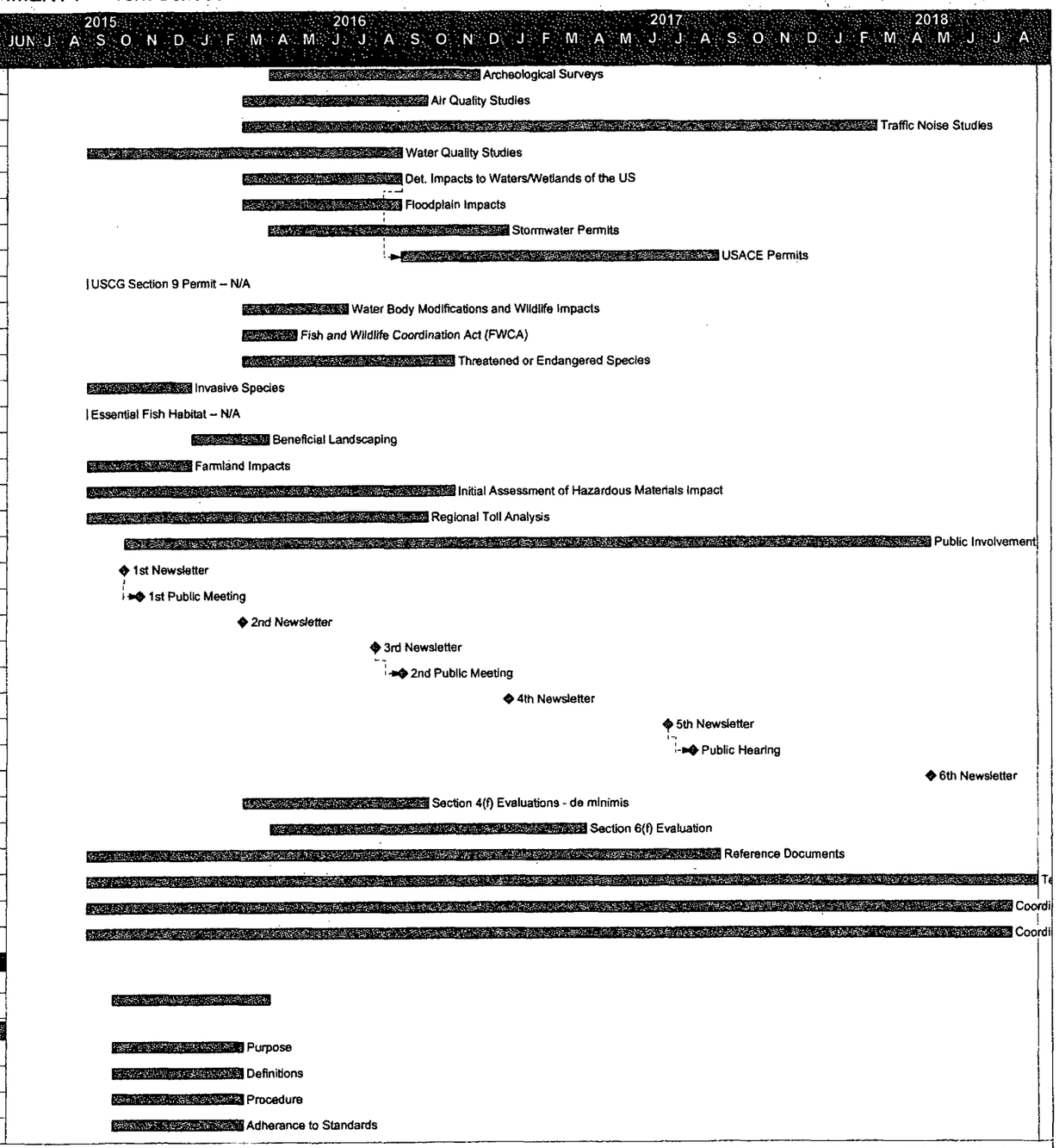
Other Direct Expenses	Unit	Fixed	Maximum	Quantity	Cost
Lodging/Hotel (Taxes/fees not included)	day/person		$ 144.00	40	$ 5,760.00
Lodging/Hotel - Taxes and Fees	day/person		$ 21.60	40	$ 864.00
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person		$ 51.00	40	$ 2,040.00
Mileage	mile	$ 0.575		1600	$ 920.00
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day		$ 50.00	15	$ 750.00
Rental Car Fuel	gallon		$ 3.75	20	$ 75.00
Rental Car Fuel	day		$ 25.00	15	$ 375.00
Parking	day		$ 20.00	1	$ 20.00
Toll Charges	each		$ 2.00	10	$ 20.00
Overnight Mail - letter size	each		$ 25.00	2	$ 50.00
Overnight Mail - oversized box	each		$ 30.00	6	$ 180.00
Courier Services	each		$ 40.00	2	$ 80.00
Photocopies B/W (8 1/2" X 11")	each	$ 0.10		6600	$ 660.00
Photocopies B/W (11" X 17")	each	$ 0.20		1800	$ 360.00
Photocopies Color (8 1/2" X 11")	each	$ 0.65		3000	$ 1,950.00
CDs	each	$ 1.50		16	$ 24.00
TARL Site Recording	site		$ 64.00	3	$ 192.00
Curator (Drawer & TX Archaelogical ResearchLab for artifacts & report)	per project		$ 750.00	1	$ 750.00
Backhoe Rental	day		$ 950.00	3	$ 2,850.00
Historical Aerial Images	unit		$ 90.00	5	$ 450.00
				Total	$ 18,370.00

Activity ID	Description	Original Dur	Rem Dur	Early Start	Early Finish
		0	0	09/01/15	09/01/15
1010	Start Date	0	0	09/01/15	
Route and Design Studies					
		337	337	09/01/15	12/15/16
FC:110					
110.01	Schematic Design - General Tasks	327	327 *	09/01/15	12/01/16
110.02	Conceptual Design Schematics Alternatives	174	174 *	10/01/15	06/01/16
110.03	Refine Conceptual Schematic Design Alternatives	88	88 *	06/01/16	10/03/16
110.03.1	30% Development	43	43	10/01/15	12/01/15
110.03.2	60% Development	44	44	12/01/15	02/01/16
110.03.3	90% Development	44	44	02/01/16	04/01/16
110.03.4	100% Development (DES)	43	43	04/01/16	06/01/16
110.04	Geometric Design Schematics	88	88 *	06/01/16	10/03/16
110.05	IAJR	21	21 *	07/01/16	08/01/16
110.06	Design Exceptions	23	23 *	08/01/16	09/01/16
110.07	Value Engineering (VE) Study	1	1 *	07/15/16	07/18/16
110.08	Traffic Analysis Report	76	76 *	06/01/16	09/15/16
110.09	Phasing Exhibits	66	66 *	07/01/16	10/03/16
110.10	Preliminary Cost Estimate	32	32 *	09/15/16	10/31/16
110.11	Engineering Summary Report	22	22 *	11/01/16	12/01/16
110.12	Collection of Data, Reports, and Maps	32	32 *	09/01/15	10/15/15
110.13	Update the Technical Methodology Plan	32	32 *	10/01/15	11/16/15
110.14	Design Visualization - 3D Computer Modeling	54	54 *	10/03/16	12/15/16
110.15	Construction Sequence	174	174 *	12/01/15	08/01/16
Social, Economic, and Env. Studies and PI					
		783	783	09/01/15	08/31/18
FC:120					
120.01	Technical Work Group	761	761 *	10/01/15	08/31/18
120.02	Environmental Documentation	783	783 *	09/01/15	08/31/18
120.03	Risk Assessments, Project Scope, & Tech. Reports	413	413 *	09/01/15	03/31/17
120.04	Environmental Assessment Content and Format	566	566 *	09/01/15	11/01/17
120.05	Land Use and Community Impacts	173	173 *	09/01/15	04/29/16
120.06	Environmental Justice	195	195 *	09/01/15	05/31/16
120.07	Limited English Proficiency	195	195 *	09/01/15	05/31/16
120.08	Historic Resource ID, Eval., and Doc. Services	153	153 *	03/01/16	09/30/16
120.09	Historic Resources Survey Reports	130	130 *	10/03/16	03/31/17
120.10	Intensive Survey for Historic Resources	261	261 *	03/01/16	03/01/17
120.11	Archeological Background Studies	64	64 *	01/01/16	03/31/16

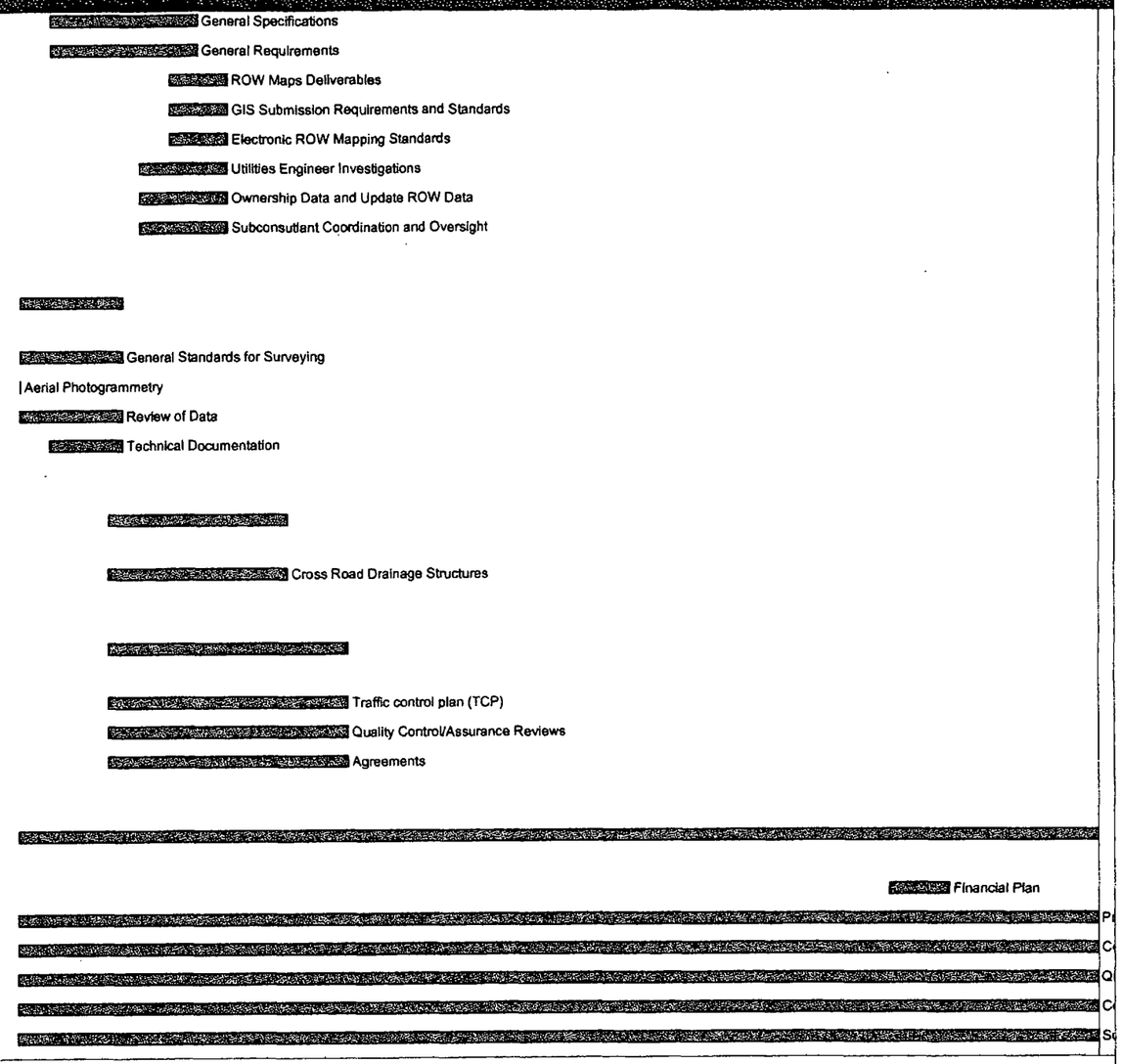


Civil Associates, Inc
IH 820
Contract No.: 02-5SDP5014

Activity ID	Description	Original Dur	Rem Dur	Early Start	Early Finish
120.12	Archeological Surveys	173	173 *	04/01/16	11/30/16
120.13	Air Quality Studies	153	153 *	03/01/16	09/30/16
120.14	Traffic Noise Studies	522	522 *	03/01/16	03/01/18
120.15	Water Quality Studies	262	262 *	09/01/15	09/01/16
120.16	Det. Impacts to Waters/Wetlands of the US	131	131 *	03/01/16	08/31/16
120.17	Floodplain Impacts	131	131 *	03/01/16	08/31/16
120.18	Stormwater Permits	197	197 *	03/31/16	01/02/17
120.19	USACE Permits	261	261 *	08/31/16	08/31/17
120.20	USCG Section 9 Permit -- N/A	0	0 *	09/01/15	09/01/15
120.21	Water Body Modifications and Wildlife Impacts	87	87 *	03/01/16	06/30/16
120.22	Fish and Wildlife Coordination Act (FWCA)	44	44 *	03/01/16	05/02/16
120.23	Threatened or Endangered Species	174	174 *	03/01/16	10/31/16
120.24	Invasive Species	87	87 *	09/01/15	12/31/15
120.25	Essential Fish Habitat -- N/A	0	0 *	09/01/15	09/01/15
120.26	Beneficial Landscaping	64	64 *	01/01/16	03/31/16
120.27	Farmland Impacts	87	87 *	09/01/15	12/31/15
120.28	Initial Assessment of Hazardous Materials Impact	304	304 *	09/01/15	10/31/16
120.29	Regional Toll Analysis	283	283 *	09/01/15	09/30/16
120.30	Public Involvement	663	663 *	10/15/15	05/01/18
120.30.1	1st Newsletter	0	0	10/15/15	
120.30.1.1	1st Public Meeting	0	0	11/02/15	
120.30.2	2nd Newsletter	0	0	03/01/16	
120.30.3	3rd Newsletter	0	0	08/01/16	
120.30.3.1	2nd Public Meeting	0	0	09/01/16	
120.30.4	4th Newsletter	0	0	01/02/17	
120.30.5	5th Newsletter	0	0	07/03/17	
120.30.5.1	Public Hearing	0	0	08/01/17	
120.30.6	6th Newsletter	0	0	05/01/18	
120.31	Section 4(f) Evaluations - de minimis	153	153 *	03/01/16	09/30/16
120.32	Section 6(f) Evaluation	260	260 *	04/01/16	03/31/17
120.33	Reference Documents	523	523 *	09/01/15	09/01/17
120.34	Technical Support	783	783 *	09/01/15	08/31/18
120.35	Coordination Meetings	761	761 *	09/01/15	08/01/18
120.36	Coordination Meeting Support	761	761 *	09/01/15	08/01/18
Ownership Data, ROW Mapping and Utility Location					
		132	132	10/01/15	04/01/16
FC:130					
130.01	Purpose	108	108 *	10/01/15	03/01/16
130.02	Definitions	108	108 *	10/01/15	03/01/16
130.03	Procedure	108	108 *	10/01/15	03/01/16
130.04	Adherance to Standards	109	109 *	10/01/15	03/01/16



Activity ID	Description	Original Dur	Rem Dur	Early Start	Early Finish
130.05	General Specifications	109	109 *	10/01/15	03/01/16
130.06	General Requirements	109	109 *	10/01/15	03/01/16
130.07	ROW Maps Deliverables	44	44 *	02/01/16	04/01/16
130.08	GIS Submission Requirements and Standards	44	44 *	02/01/16	04/01/16
130.09	Electronic ROW Mapping Standards	44	44 *	02/01/16	04/01/16
130.10	Utilities Engineer Investigations	65	65 *	01/01/16	04/01/16
130.11	Ownership Data and Update ROW Data	65	65 *	01/01/16	04/01/16
130.12	Subconsutlant Coordination and Oversight	65	65 *	01/01/16	04/01/16
Field Surveying and Photogrammetry					
		75	75	09/01/15	12/15/15
FC.150					
150.1	General Standards for Surveying	75	75 *	09/01/15	12/15/15
150.2	Aerial Photogrammetry	0	0 *	09/01/15	09/01/15
150.3	Review of Data	75	75 *	09/01/15	12/15/15
150.4	Technical Documentation	53	53 *	10/01/15	12/15/15
Drainage					
		131	131 *	12/01/15	06/01/16
FC.161					
161.1	Cross Road Drainage Structures	131	131 *	12/01/15	06/01/16
Miscellaneous (Roadway)					
		174	174 *	12/01/15	08/01/16
FC.163					
163.1	Traffic control plan (TCP)	174	174 *	12/01/15	08/01/16
163.2	Quality Control/Assurance Reviews	174	174 *	12/01/15	08/01/16
163.3	Agreements	174	174 *	12/01/15	08/01/16
Project Management					
		783	783	09/01/15	08/31/18
FC.164					
164.1	Financial Plan	42	42 *	02/01/18	04/02/18
164.2	Progress Reports and Invoices	783	783 *	09/01/15	08/31/18
164.3	Coordination and Administration	783	783 *	09/01/15	08/31/18
164.4	Quality Management Plan	783	783 *	09/01/15	08/31/18
164.5	Control and Scheduling	783	783 *	09/01/15	08/31/18
164.6	Subconsultant Management	783	783 *	09/01/15	08/31/18



ATTACHMENT G

Computer Graphics Files for Document and Information Exchange

NOT APPLICABLE

ATTACHMENT H-SG

Historically Underutilized Business for State Funded Professional or Technical Services Contracts HUB Goal Assigned-State of Texas Subcontracting Plan Required

1) **POLICY.** It is the policy of the Department to ensure that HUBs shall have an equal opportunity to participate in the performance of contracts; to create a level playing field on which HUBs can compete fairly for contracts and subcontracts; to ensure nondiscrimination on the basis of race, color, national origin, or gender in the award and administration of contracts; to help remove barriers to the participation of HUBs in department contracts; and, to assist in the development of firms that can compete successfully in the market place outside the HUB program. Consequently, the HUB requirements of the Department's HUB Program apply to this contract as follows:
   (1) The Provider agrees to insure that they shall take all necessary and reasonable steps to meet the HUB goal for this contract.
      a. The Provider and any subprovider(s) shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of contracts.
      b. When submitting the contract for execution by the Department, the Provider must complete and furnish Exhibit H-1 which lists the commitments made to all subproviders, including certified HUB subprovider(s) that are to meet the contract goal, and Exhibit H-2 which is a commitment agreement(s) containing the original signatures of the Provider and HUB(s) that were indicated in the original submitted State of Texas HUB Subcontracting Plan (HSP) in Section 8. For Work Authorization Contracts, Exhibit H-1 is required at the time of submitting the contract for execution by the Department. Exhibit H-2 will be required to be completed and attach with each work authorization number that is submitted for execution, if the HUB will be performing work. If non-HUB subprovider is performing work, insert N/A (not applicable) on the line provided. A prime must allow a HUB maximum opportunity to perform the work by not creating unnecessary barriers or artificial requirements for the purpose of hindering a HUB's performance under the contract. Any substitutions or changes to the HSP, in addition to any changes to the original contract award, shall be subject to prior written approval by the Department. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
      c. Failure to carry out the requirements set forth above shall constitute a breach of contract and may result in a letter of reprimand; in termination of the contract by the Department; in a deduction from money due or to become due to the Provider, not as a penalty but as damages to the Department's HUB Program; or such other remedy or remedies as the Department deems appropriate.
2) **DEFINITIONS.**
   a. "Department" means the Texas Department of Transportation (TxDOT).
   b. "Contract" is the agreement between the Texas Department of Transportation and a Provider.
   c. "Provider" is any individual or company that provides professional or technical services.
   d. "Joint Venture" means an association of two or more businesses to carry out a single business enterprise for profit which combines their property, capital, efforts, skills and knowledge.
   e. "Historically Underutilized Business (HUB)" means any business so certified by the Texas Building and Procurement Commission.
3) **PERCENTAGE GOAL.** The goal for Historically Underutilized Business (HUB) participation in the work to be performed under this contract is **23.7** % of the contract amount.
4) **PROVIDER'S RESPONSIBILITIES.** A Provider (HUB or non-HUB) must perform a minimum of 30% of the contract with its employees (as defined by the Internal Revenue Service). The contract is subject to the HSP Good Faith Effort Requirements.
   a. A Provider who cannot meet the contract goal, in whole or in part, should have documented any of the following and other efforts made as a "Good Faith Effort" to obtain HUB participation.
      (1) Whether the prime advertised in general circulation, trade association, and/or minority/women focus media concerning subcontracting opportunities.

(2) Whether the prime provided written notice to at least three (3) qualified HUBs allowing sufficient time for HUBs to participate effectively.
(3) Whether the prime documented reasons for rejection or met with the rejected HUB to discuss the rejection.
(4) Whether the prime provided qualified HUBs with adequate information about bonding, insurance, the plans, the specifications, scope of work and requirements of the contract.
(5) Whether the prime negotiated in good faith with qualified HUBs, not rejecting qualified HUBs who are also the lowest responsive bidder.
(6) Whether the prime used the services of available minority and women community organizations, contractor's groups, local, state, and federal business assistance offices, and other organizations that provide support services to HUBs.

NOTE: The Provider must not cause or allow subproviders to bid their services.

b. The preceding information shall be submitted directly to the Chair of the Consultant Selection Team responsible for the contract.
c. The Provider shall make all reasonable efforts to honor commitments to HUB subproviders named in the original HSP in Section 8. Where the Provider terminates or removes a HUB subprovider named in the initial commitment, the Provider must demonstrate on a case-by-case basis to the satisfaction of the Department that the originally designated HUB was not able or willing to perform. The term "unable" includes, but is not limited to, a firm that does not have the resources and expertise to finish the work and/or a firm that substantially increases the time to complete the project.
d. The Provider shall make all reasonable efforts to replace a HUB subprovider that is unable or unwilling to perform successfully with another HUB and must meet the HSP Good Faith Effort Requirements. Any substitution of HUBs shall be subject to prior written approval by the Department. The Department will request a statement from the firm being replaced concerning its replacement prior to approving the substitution. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
e. The Provider shall designate a HUB liaison officer who will administer the Provider's HUB program and who will be responsible for maintenance of records of efforts and contacts made to subcontract with HUBs.

5) **ELIGIBILITY OF HUBs.**

a. The Texas Building and Procurement Commission (TBPC) certifies the eligibility of HUBs.
b. The TBPC maintains a directory of certified HUBs. The HUB Directory is available through the Department's Business Opportunity Programs Office and through the Internet at the TBPC's Website (http://www2.tbpc.state.tx.us/cmbl/hubonly.html).
c. Only HUB firms certified and identified in specific categories and classes at the time the contract is signed or at the time the commitments are submitted are eligible to be used in the information furnished by the Provider as required under Section 2.c. above.
d. If during the course of the contract it becomes necessary to substitute another HUB firm for a firm named in the information submitted by the Provider as required by Section 2.c. above, then only certified HUBs will be considered eligible as a substituted firm. The Provider's written request for substitutions of HUB subproviders shall be accompanied by a detailed explanation, which should substantiate the need for a substitution. The Department will verify the explanation with the HUB firm being replaced before giving approval of the substitution. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
e. The 73rd Legislature passed Texas Civil Statutes, Article 601i, relative to contracts between governmental entities and certain disadvantaged businesses. The Statute provides for civil penalties for persons who falsely claim disadvantaged business status and for the general contractor who knowingly contracts with a person claiming to be a disadvantaged business.

6) **DETERMINATION OF HUB PARTICIPATION.**

A firm must be an eligible HUB and perform a professional or technical function relating to the project. Proof of payment, such as copies of canceled checks, properly identifying the Department's contract number or project number may be required to substantiate the payment, as deemed necessary by the Department. A HUB subprovider, with prior written approval from the Department, may subcontract 70% of a contract as long as the HUB subprovider performs a commercially useful function. All subcontracts shall include the provisions

required in the subcontract and shall be approved as to form, in writing, by the Department prior to work being performed under the subcontract. A HUB performs a commercially useful function when it is responsible for a distinct element of the work of a contract; and actually manages, supervises, and controls the materials, equipment, employees, and all other business obligations attendant to the satisfactory completion of contracted work. If the subcontractor uses an employee leasing firm for the purpose of providing salary and benefit administration, the employees must in all other respects be supervised and perform on the job as if they were employees of the subcontractor.

7) **COMPLIANCE OF PROVIDER.**

8) To ensure that HUB requirements of this contract are complied with, the Department will monitor the Provider's efforts to involve HUBs during the performance of this contract. This will be accomplished by a review of the monthly State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) submitted to the Business Opportunity Programs Office by the Provider indicating his/her progress in achieving the HUB contract goal, and by compliance reviews conducted by the Department. The State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) must be submitted at a minimum monthly to the Business Opportunity Programs Office, in addition to with each invoice to the appropriate agency contact.

The Provider shall receive credit toward the HUB goal based on actual payments to the HUB subproviders with the following exceptions and only if the arrangement is consistent with standard industry practice.

(1) Payments to brokers or firms with a brokering type operation will be credited only for the amount of the commission;
(2) Payments to a joint venture will not be credited unless all partners in the joint venture are HUBs;
(3) Payments to a HUB subprovider who has subcontracted a portion of the work required under the subcontract will not be credited unless the HUB performs a commercially useful function;
(4) Payments to a HUB will not be credited if the firm does not provide the goods or perform the services paid for;
(5) Payments made to a HUB that cannot be linked by an invoice or canceled check to the contract under which credit is claimed will not be credited.

A Provider must not withhold or reduce payments to any HUB without a reason that is accepted as standard industry practice. A HUB prime or subprovider must comply with the terms of the contract or subcontract. Work products, services, and commodities must meet contract specifications whether performed by a prime or subprovider.

A Provider's failure to meet the HUB goal and failure to demonstrate to the Department's satisfaction sufficient "Good Faith Effort" on his/her part to obtain HUB participation shall constitute a breach of contract. In such a case, the Department reserves the right to issue a letter of reprimand; to deduct the amount of HUB goal not accomplished by HUBs from the money due or to become due the Provider, not as a penalty but as damages to the Department's HUB program; or such other remedy or remedies as the Department deems appropriate.

9) **RECORDS AND REPORTS.**

a. After submission of the initial commitment (Exhibit H-1), required by Section 2.c. of this attachment, the Provider shall submit State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) at a minimum monthly, after contract work begins, on subcontracting involvement. One copy of the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) is to be sent to the Business Opportunity Programs Office of the Department monthly. In addition, the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) must be submitted with the Provider's invoice. All payments made to subproviders are to be reported. **These State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Reports are required monthly even during months when no payments to subproviders have been made.** The State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report will be required until all work on the contract has been completed. The Department may verify the amounts being reported as paid to HUBs by requesting copies of canceled checks paid to HUBs on a random basis.

b. Subproviders should be identified on the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) by name, the amount of actual payment made to each during the billing period, cumulative payment amount and percentage of the total contract amount.
c. All such records must be retained for a period of four years following final payment, or until an investigation, audit, examination, or other review undertaken during the four years, and shall be available at reasonable times and places for inspection by authorized representatives of the Department and other agencies.
d. Prior to receiving final payment, the Provider shall submit a Final Report (Exhibit H-4), detailing the subprovider payments to the Business Opportunity Programs Office of the Department, and one copy to the Department with the Provider's final invoice.

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EXHIBIT H-1

Texas Department of Transportation
Subprovider Monitoring System
Commitment Worksheet

Contract #: 02-5SDP5014 Assigned Goal: 23.7% Federally Funded _____ State Funded ___X___

Prime Provider: Civil Associates, Inc. Total Contract Amount: $5,510,974.80

Prime Provider Info: DBE ___ HUB ___ Both _X_

Vendor ID #: 14120967543 DBE/HUB Expiration Date: DBE: 04/30/2015
HUB: 08/31/2015

(First 11 Digits Only)

If no subproviders are used on this contract, please indicate by placing "N/A" on the 1st line under Subproviders.

Subprovider(s) (List All)	Type of Work	Vendor ID # (First 11 Digits Only)	D=DBE H=HUB	Expiration Date	$ Amount or % of Work *
CH2M Hill, Inc.	Roadway & Bridge Design Support	15909181891			11.00%
HDR Engineering, Inc.	Traffic / ITS Engineering	14706805687			9.00%
Lina T. Ramey & Associates, Inc.	Hydro/Hydraulic & Survey	17527741478	D H	10/31/2015 12/18/2016	14.00%
Gorrondona & Associates, Inc.	Geotechnical & Survey	17523329708	H	02/23/2019	5.00%
AmaTerra Environmental, Inc.	Environmental Support	14539677063	D H	03/16/2018 05/31/2016	5.00%
Halff Associates, Inc.	Design Visualizations	17513086995			4.00%
Subprovider(s) Contract or % of Work* Totals					48.00%

*For Work Authorization Contracts, indicate the % of work to be performed by each subprovider.

Total DBE **or** HUB Commitment Dollars $_____

Total DBE **or** HUB Commitment Percentages of Contract __24.00%
(Commitment Dollars and Percentages are for Subproviders only)

12/06 DBEH1.AT

EXHIBIT H-2

Texas Department of Transportation
Subprovider Monitoring System Commitment Agreement

This commitment agreement is subject to the award and receipt of a signed contract from the Texas Department of Transportation (TxDOT). ***NOTE: Exhibit H-2 is required to be attached to each contract that does not include work authorizations. Exhibit H-2 is required to be attached with each work authorization. Exhibit H-2 is also required to be attached to each supplemental work authorization. If DBE/HUB Subproviders are used, the form must be completed and signed. If no DBE/HUB Subproviders are used, indicate with "N/A" on this line: _____ and attach with the work authorization or supplemental work authorization.***

Contract #: _____ Assigned Goal: _____% Prime Provider: _____

Work Authorization (WA)#: _____ WA Amount: _____ Date: _____

Supplemental Work Authorization (SWA) #: _____ to WA #: _____ SWA Amount: _____

Revised WA Amount: _____

Description of Work *(List by category of work or task description. Attach additional pages, if necessary.)*	**Dollar Amount** *(For each category of work or task description shown.)*
Total Commitment Amount *(Including all additional pages.)*	$

IMPORTANT: The signatures of the prime and the DBE/HUB and Second Tier Subprovider, if any (both DBE and Non-DBE) and the total commitment amount must always be on the same page.

Provider Name: **Address:** **Phone # & Fax #:** **Email:**	**Name:** _____ ***(Please Print)*** **Title:** _____ _____ **Signature** **Date**
DBE/HUB Sub Provider **Subprovider Name:** **VID Number:** **Address:** **Phone # & Fax #:** **Email:**	**Name:** _____ ***(Please Print)*** **Title:** _____ _____ **Signature** **Date**
Second Tier Sub Provider **Subprovider Name:** **VID Number:** **Address:** **Phone #& Fax #:** **Email:**	**Name:** _____ ***(Please Print)*** **Title:** _____ _____ **Signature** **Date**

VID Number is the Vendor Identification Number issued by the Comptroller. If a firm does not have a VID Number, please enter the owner's Social Security or their Federal Employee Identification Number (if incorporated).

EXHIBIT H-4

Texas Department of Transportation
Subprovider Monitoring System
Final Report

The Final Report Form should be filled out by the Prime Provider and submitted to the Contract Manager and the Business Opportunity Programs Office for review upon completion of the contract. The report should reflect **all subcontract activity** on the project. The report will aid in expediting the final estimate for payment. If the HUB or DBE goal requirements were not met, documentation supporting good faith efforts must be submitted.

DBE Goal: _____% **OR** HUB Goal: %

Total Contract Amount: $_____ Total Contract Amount: $ _____

Contract Number:

Vendor ID #	Subprovider	Total $ Amt Paid to Date
	TOTAL	

This is to certify that _____% of the work was completed by the HUB or DBE subproviders as stated above.

_____
By: Prime Provider

_____
Per: Signature

Subscribed and sworn to before me, this _____ day of _____, 20 __

_____Notary Public _____ County

My Commission expires:_____

12/06 DBE-H4.A

HUB Subcontracting Plan (HSP)
Prime Contractor Progress Assessment Report

This form must be completed and submitted to the contracting agency each month to document compliance with your HSP.

Contract/Requisition Number: ____________ **Date of Award:** ____________ (mm/dd/yyyy) **Object Code:** ____________ (Agency Use Only)

Contracting Agency/University Name: ____________

Contractor (Company) Name: ____________ **State of Texas VID #:** ____________

Point of Contact: ____________ **Phone #:** ____________

Reporting (Month) Period: ____________ **Total Amount Paid this Reporting Period to Contractor:** $ -

Report HUB and Non-HUB subcontractor information

Subcontractor's Name	Subcontractor's VID or HUB Certificate Number	*Texas Certified HUB? (Yes or No)	Total Contract $ Amount from HSP with Subcontractor	Total $ Amount Paid This Reporting Period to Subcontractor	Total Contract $ Amount Paid to Date to Subcontractor	Object Code (Agency Use Only)
			$ -	$ -	$ -	
			$ -	$ -	$ -	
			$ -	$ -	$ -	
			$ -	$ -	$ -	
			$ -	$ -	$ -	
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TOTALS:			$ -	$ -	$ -	

Signature: ____________ **Title:** ____________ **Date:** ____________

*Note: HUB certification status can be verified on-line at: **http://www2.cpa.state.tx.us/cmbl/hubonly.html** Rev. 10/07